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UNIQUE PHYSICIAN IDENTIFICATION NUMBER (UPIN) VALIDATION STUDIES

Final Report

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UNIQUE PHYSICIAN IDENTIFICATION NUMBER (UPIN) VALIDATION STUDIES

Preface

The *Physician Registry* was established in 1989 by HCFA for the purpose of issuing unique identification numbers (UPINs) to the following Medicare providers: doctors of medicine, osteopathy, dental medicine, dental surgery, podiatry and optometry, and chiropractors. To assist in the identification of individual providers, the *Registry* collects a variety of information. HCFA contracted with Health Economics Research, Inc. (HER) to perform studies on the *Registry*'s data quality and on the consistency of physician information on Medicare claims. Another objective was to develop data edits both to assist carriers in maintaining their *Registry* data and to assist researchers in using *Registry* data.

The current report is the fourth and final report produced under the HER contract. It has several components, including: (1) estimates of the number of HMO physicians without UPINs who provide services to Medicare beneficiaries, (2) an analysis to identify the inadvertent issuance of UPINs to group practices and corporations, (3) an analysis of the consistency of a physician's Medicare participation status on the *Registry* and on the physician's associated Medicare claims and (4) a case study of the operations of the *Registry* contractor and carrier operations.

This also contains an executive summary of the results for all four deliverables. The first report describes the results of an analysis of the quality of *Registry* data. It also provides estimates of the number of providers that might have more than one UPIN. The second report provides data edits for use by carriers in maintaining their *Registry* data. The third report provides data edits for use by researchers using *Registry* data. An additional deliverable consists of documentation for SAS files submitted to HCFA. The SAS files contain special variables that indicate the quality of data elements maintained by the *Registry*, the consistency between pairs of data elements, and an indication whether a provider might have more than one UPIN.

EXECUTIVE SUMMARY

ES1.0 INTRODUCTION

In response to a Congressional mandate (P.L. 99-272), the *Physician Registry* was established in 1989 by HCFA; and the administration of the *Registry* was contracted to Transamerica Occidental Life Insurance Company (TOLIC). The primary purpose of the *Registry* is to issue a Unique Physician Identification Number (UPIN) to each physician billing Medicare for services provided to its beneficiaries. This one UPIN should then be used by the provider during his/her entire lifetime association with the Medicare program.

Each Part B Medicare carrier had developed its own provider identification numbers (PINs) for their local billing and claims processing systems. In consequence, prior to the establishment of the *Registry*, there was not a unique national Medicare identification number for each Part B provider. (In this report, the term *provider* means the practitioners that are called *physicians* for the purpose of Medicare payment – specifically, medical doctors (including osteopaths), doctors of dental medicine and dental surgery, chiropractors, optometrists, and podiatrists.) The lack of a unique Medicare PIN meant that individual providers could not be readily identified. The inability to uniquely identify providers hindered HCFA's efforts to avoid duplicate Part B billings by interns and residents for services that were also paid as Part A hospital services to a teaching hospital. The lack of unique PINs also hindered efforts to detect fraud and abuse and to effectively conduct quality assurance studies. In addition to operational issues, studies of provider behavioral responses to Medicare policy changes were limited because individual providers could not be reliably identified. UPINs were created in the expectation of overcoming these deficiencies.

Once *Registry* data became available, HCFA researchers and their contractors found a number of problems which led to concerns about the overall quality of the data. Missing data elements and infeasible values were of special concern. For instance, infeasible dates of death (e.g., between 1995 and 1998) were found. Also, logical inconsistencies were found, e.g., physician status indicating that the provider is a medical doctor while credential indicates that the provider is a chiropractor. Such problems also raised concern regarding the potential issuance of more than one UPIN to a provider.

HCFA contracted with Health Economics Research, Inc. (HER) to investigate the quality of the *Registry's* data. Specifically, major goals of this study were to document the extent to which data elements do not have valid values, and to determine, if possible, the reasons why

invalid values are present. Another important goal of the contract was to estimate the number of providers with multiple UPINs.

Other contract goals included:

- to determine whether, and to what extent, UPINs are issued to group practices instead of individual providers;
- to conduct a study of the consistency in the coding of Medicare participation status between the *Registry* and Part B physician claims;
- to estimate the number of HMO physicians without UPINs that treat Medicare beneficiaries and
- to develop data edits to assist carriers maintain their Medicare provider files and to assist researchers in using *Registry* data.

Our study was performed on the July 1, 1993 *Registry* file provided to HCFA by TOLIC.

ES2.0 Site Visits

Site visits to the *Registry* contractor and six Medicare carriers were conducted during August and September, 1993. The primary purpose of the site visits was (1) to determine how *Registry* and carrier operations could affect the quality of *Registry* data and (2) to determine whether there were special circumstances that account for incomplete data. Another goal was to determine to what extent the UPIN duties constitute a continuing burden to the carriers.

The primary findings from the carrier site visits are:

(1) During the implementation phase (1989), carriers were constrained in their ability to obtain data, even data previously not collected such as date of birth. Carriers were not allowed either to directly contact providers for the requisite information, or to use copyrighted American Medical Association (AMA) data.

(2) Since carriers were not provided additional funding to develop incomplete records, it was understood that carriers would be submitting records with incomplete information.

(3) Three data elements (e.g., school code, graduation year and state license number) were not required during the implementation phase but subsequently became required (December 1991). Carriers, however, have not been asked to retrospectively obtain this data for providers already included in their provider files.

(4) The extent to which carriers screen or edit data before sending it to the *Registry* varies considerably. At one extreme, the on-line carrier edits are quite minimal (e.g., valid date formats). At the other extreme, the on-line edits are extensive and comprehensive. To identify data problems not caught during entry into their provider file, some carriers perform post-entry data edits before sending the data to the *Registry*. Also, some carriers perform retrospective maintenance on their provider files.

(5) The implementation phase of the *Registry* constituted a significant burden for carriers. However, except for the Railroad Retirement Board (RRB), carriers do not consider their current UPIN duties to be burdensome.

(6) RRB carriers have experienced considerable difficulty in obtaining high quality provider information. The main reason is that most providers do not provide care for many RRB beneficiaries. For this reason alone, providers have little incentive to cooperate with the RRB. RRB relations with providers are aggravated by their reimbursement rules, in as much as reimbursement amounts are determined by the beneficiary's residence rather than provider location. This becomes a problem when the payment is less than what the provider usually is paid and the provider is forced to accept assignment.

The primary findings from the *Registry* site visit are:

(1) TOLIC processed 1.2 million provider records from 57 carriers during the first half of 1989 (the *load* phase), creating about 970,000 practice setting records for over 465,000 individual providers. Given the magnitude of the task performed during a short period of time, it is not surprising that TOLIC could not resolve all inconsistencies among provider records. Nor could it correct all erroneous values and obtain values for missing data elements.

(2) To ensure data quality, TOLIC has developed over time a large number of data edits; and it has instituted algorithms to identify and assign practice settings to the appropriate provider.

- The data edits are used on both new practice settings and on "update" records.

- TOLIC has also developed a set of rules to update the header section of provider records. The header section is the source of data TOLIC initially uses to screen existing records in the process of determining whether to issue a new UPIN.

- To prevent the issuance of more than one UPIN to a provider, TOLIC uses both computerized algorithms and manual data checks. UPINs are only issued after a manual check of *Registry* data.

(3) TOLIC reported that some carriers seem to believe that it is the responsibility of the *Registry* to detect errors. Our interviews with the case study carriers suggest that this perception is accurate. While it is part of TOLIC's duties to ensure *Registry* data quality, carriers are not supposed to rely on TOLIC to perform basic data edits.

(4) TOLIC also reported four continuing problems with carriers that increase turnaround time and administrative costs, as well as lowering the quality of *Registry* data. They are (1) submission of incomplete carrier records, (2) the relatively low quality of carrier records submitted by the RRB carriers, (3) duplicate UPINs and (4) the inadequate training of new carrier UPIN coordinators.

ES3.0 ANALYSIS OF *REGISTRY* DATA INTEGRITY[1]

From the site visits, we learned that carriers were constrained in obtaining data during the implementation phase. Additionally, three data elements (e.g., school code, graduation year and state license number) were not required until December 1991. Over two-thirds of the 693,355 UPINs issued as of July 1993 were issued during the implementation phase; and nearly one-half of the associated two million practice settings were added during that period. Of the 693,355 UPINs on the July 1993 *Registry* file, 660,147 have at least one active practice setting. These 660,147 UPINs have 1.95 million practice settings associated with them, of which nearly 14 percent are deactivated. The 33,208 UPINs with no active practice settings have 45,586 practice settings associated with them.

We wanted to determine to what extent the implementation experience affected quality of *Registry* data. We also wanted to evaluate the extent to which data quality has improved as the carriers and *Registry* staff have gained experience. Another goal was to determine whether some carriers have relatively poor UPIN data.

In addition to checking the integrity of each data element, data element consistency was examined (1) across practice settings, (2) between practice settings and the header portion of the provider's record, and (3) between different data elements within a record (e.g., provider credential and specialty type).

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[1]Unique Physician Identification Number (UPIN) Validation Studies: Carrier Analysis, HCFA Master Contract No. 500-92-0020, Delivery Order No. 5, August 23, 1994.

ES3.1 Integrity of Individual Data Elements

The combined rate of Missing, Erroneous, Dubious, and Unknown values (i.e., the MEDU rate) was highest for both the header and practice setting "versions" of birth year, medical school and graduation year - a total of six data elements (Chapter 4, *Carrier Analysis*). The MEDU rate was also relatively high for state license number. Missing values were the most important factor responsible for these high MEDU rates. For these seven data elements, missing value rates ranged from nine percent to 22 percent.

The MEDU rates were highest for the year that the *Registry* began operations (1989); and they have declined thereafter, with lower missing value rates accounting for most of the decline. For the practice setting versions of birth year, medical school, and graduation year, the continuing difficulties confronted by the RRB carriers in obtaining provider information have prevented the national missing value rates from falling below five to six percent in recent years, (i.e., in 1992 and 1993). For instance, 98.6 percent of the 23,206 missing values for birth year in 1992-93 are attributable to the RRB carriers. For all other carriers combined, the missing value rate for birth year is only 0.1 percent.

MEDU rates vary considerably across the 59 carriers:

(1) Four carriers have combined MEDU rates greater than 36 percent for the practice setting version of birth year, while another 20 carriers have combined MEDU rates between 18 and 36 percent (Figure ES-1).

(2) Five carriers have combined MEDU rates greater than 36 percent for the practice setting version of school code, while another 22 carriers have combined MEDU rates between 18 and 36 percent (Figure ES-2).

(3) Four carriers have combined MEDU rates greater than 44 percent for the practice setting version of graduation year, while another 23 carriers have combined MEDU rates between 22 and 44 percent (Figure ES-3).

(4) Seven carriers have missing value rates greater than 44 percent for state license number, while another 12 carriers have combined MEDU rates between 22 and 44 percent (Figure ES-4).

(5) For all four data elements, the Georgia carrier has some of the highest combined MEDU rates. In addition, for three of the four data elements, the Arkansas, Massachusetts, and South Carolina carriers have among the highest combined MEDU rates.

FIGURE ES-1

COMBINED MISSING/ERRONEOUS/DUBIOUS RATES FOR BIRTH YEAR BY CARRIER

Less than 18 percent		18 to 36 percent		Greater than 36 percent	
00801 BS of Western NY	NY				
00865 Pennsylvania BS	PA				
00590 Florida BC/BS	FL				
00780 C&S Admin. Services	NH				
10490 Travelers Ins. Co.	VA				
00528 Arkansas BC/BS	LA				
10250 Travelers Ins. Co.	MS				
00751 Montana BC/BS	MT				
00820 North Dakota BC/BS	SD-ND				
16510 Nationwide Ins. Co.	WV				
00860 Pennsylvania BS	NJ				
16360 Nationwide Ins. Co.	OH				
02050 Transamerica Occidental	So. CA				
05535 Connecticut General	NC				
00655 Kansas BS	NE				
00650 Kansas BS	KS	00630 Indiana BC/BS	IN		
00510 Alabama BC/BS	AL	00720 Minnesota BC/BS	MN		
01290 Aetna Life & Casualty	NV	00781 C&S Admin. Services	VT		
10240 Travelers Ins. Co.	MN	21200 C&S Admin. Services	ME		
01380 Aetna Life & Casualty	OR	00803 Empire BC/BS	NY		
00550 Colorado BC/BS	CO	01360 Aetna Life & Casualty	NM		
01020 Aetna Life & Casualty	AK	10074 Travelers-RRB-UT	RRB		
00951 Wisconsin Physician Serv.	WI	10230 Travelers Ins. Co.	CT		
11260 Missouri Gen. Amer. Life	MO	00910 Utah BC/BS	UT		
00870 Rhode Island BS	RI	00621 Illinois BC/BS	IL		
00710 Michigan BC/BS	MI	01370 Aetna Life & Casualty	OK		
00660 Kentucky BC/BS	KY	01030 Aetna Life & Casualty	AZ		
00740 Kansas BS	MO-KS	10072 Travelers-RRB-GA	RRB		
00640 Iowa BS	IA	00570 Pennsylvania BS	DE		
05440 Connecticut General	TN	00580 Pennsylvania BS	DC		
00973 S.S.S.	PR	00690 Maryland BS	MD		
00932 Washington Physician Serv.	WA	05130 Connecticut General	ID	01040 Aetna Life & Casualty	GA
00825 North Dakota BC/BS	WY	01120 Aetna Life & Casualty	HI	00700 C&S Admin. Services	MA
00542 California BS	No. CA	00900 Texas BC/BS	TX	00520 Arkansas BC/BS	AR
00974 S.S.S.	VI	14330 Group Health Ins., Inc.	NY	00880 South Carolina BC/BS	SC

NOTES: This figure is based on the practice setting version of birth year. For each column, the carriers with the highest values are at the top.

SOURCE: Physician Registry, July 1993.

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FIGURE ES-2

COMBINED MISSING/ERRONEOUS RATES FOR SCHOOOL CODE BY CARRIER

00801	Blue Shield of Western New York	NY					
01020	Aetna Life and Casualty	AK					
00865	Pennsylvania BS	PA					
00660	Kentucky BC/BS	KY					
00710	Michigan BC/BS	MI					
00780	C&S Administrative Services	NH					
10250	Travelers Insurance Co.	MS					
14330	Group Health Insurance, Inc.	NY					
01120	Aetna Life and Casualty	HI					
00860	Pennsylvania BS	NJ					
10490	Travelers Insurance Co.	VA	01360	Aetna Life and Casualty	NM		
00528	Arkansas BC/BS	LA	01370	Aetna Life and Casualty	OK		
00740	Kansas BS	MO-KS	21200	C&S Administrative Services	ME		
00650	Kansas BS	KS	00720	Minnesota BC/BS	MN		
00751	Montana BC/BS	MT	00630	Indiana BC/BS	IN		
01380	Aetna Life and Casualty	OR	00781	C&S Administrative Services	VT		
00825	North Dakota BC/BS	WY	00803	Empire BC/BS	NY		
00550	Colorado BC/BS	CO	00820	North Dakota BC/BS	ND-SD		
02050	T.O.L.I.C.	So. CA	10230	Travelers Insurance Co.	CT		
10240	Travelers Insurance Co.	MN	01030	Aetna Life and Casualty	AZ		
00590	Florida BC/BS	FL	00932	Washington Physician Service	WA		
00510	Alabama BC/BS	AL	00621	Illinois BC/BS	IL		
00655	Kansas BS	NE	16360	Nationwide Insurance Co.	OH		
00870	Rhode Island Blue Shield	RI	00910	Utah BC/BS	UT		
05535	Connecticut General Life	NC	10074	R.R.B. - Travelers - UT	RRB		
05440	Connecticut General Life	TN	05130	Connecticut General Life	ID		
01290	Aetna Life and Casualty, NV	NV	10072	R.R.B. - Travelers - GA	RRB		
11260	Missouri General Am. Life	MO	00900	Texas BC/BS	TX	01040	Aetna Life and Casualty GA
00951	Wisconsin Physician Service	WI	00570	Pennsylvania BS	DE	00880	South Carolina BC/BS SC
00973	S.S.S.	PR	00690	Maryland Blue Shield	MD	00520	Arkansas BC/BS AR
00542	California BS	No. CA	00580	Pennsylvania BS	DC	00700	C&S Administrative Services MA
00974	S.S.S.	VI	16510	Nationwide Insurance	WV	00640	Iowa BS IA
	Less than 18 percent			18 to 36 percent			Greater than 36 percent

NOTES: This figure is based on the practice setting version of school code. For each column, the carriers with the highest values are at the top.

SOURCE: Physician Registry, July 1993.

FIGURE ES-3

COMBINED MISSING/ERRONEOUS/DUBIOUS RATES FOR GRADUATION YEAR BY CARRIER

00580	Pennsylvania BS	DC					
05130	Connecticut General Life	ID					
00780	C&S Administrative Services	NH					
00865	Pennsylvania BS	PA					
01020	Aetna Life and Casualty	AK					
00825	North Dakota BC/BS	WY					
00710	Michigan BC/BS	MI					
14330	Group Health insurance, Inc.	NY					
10250	Travelers Insurance Co.	MS					
10490	Travelers Insurance Co.	VA	00720	Minnesota BC/BS	MN		
00751	Montana BC/BS	MT	00520	Arkansas BC/BS	AR		
00974	S.S.S.	VI	00700	C&S Administrative Services	MA		
01120	Aetna Life and Casualty	HI	00820	North Dakota BC/BS	ND-SD		
16510	Nationwide Insurance	WV	01360	Aetna Life and Casualty	NM		
00528	Arkansas BC/BS	LA	00781	C&S Administrative Services	VT		
00650	Kansas BS	KS	01370	Aetna Life and Casualty	OK		
00860	Pennsylvania BS	NJ	21200	C&S Administrative Services	ME		
10240	Travelers Insurance Co.	MN	00910	Utah BC/BS	UT		
00590	Florida BC/BS	FL	16360	Nationwide Insurance Co.	OH		
00655	Kansas BS	NE	10230	Travelers Insurance Co.	CT		
01380	Aetna Life and Casualty	OR	00621	Illinois BC/BS	IL		
00550	Colorado BC/BS	CO	00803	Empire BC/BS	NY		
00870	Rhode Island Blue Shield	RI	10074	R.R.B. - Travelers - UT	RRB		
11260	Missouri General Am. Life	MO	00932	Washington Physician Service	WA		
00510	Alabama BC/BS	AL	01030	Aetna Life and Casualty	AZ		
01290	Aetna Life and Casualty	NV	10072	R.R.B. - Travelers - GA	RRB		
00660	Kentucky BC/BS	KY	00900	Texas BC/BS	TX		
00740	Kansas BS	MO-KS	05535	Connecticut General Life	NC		
00640	Iowa BS	IA	00570	Pennsylvania BS	DE	00951	Wisconsin Physician Service WI
05440	Connecticut General Life	TN	00690	Maryland Blue Shield	MD	01040	Aetna Life and Casualty GA
00542	California BS	No. CA	00630	Indiana BC/BS	IN	00880	South Carolina BC/BS SC
00973	S.S.S.	PR	00801	Blue Shield of Western New Yor	NY	02050	T.O.L.I.C. So. CA
	Less than 22 percent			22 to 44 percent			Greater than 44 percent

NOTES: This figure is based on the practice setting version of graduation year. For each column, the carriers with the highest values are at the top.

SOURCE: Physician Registry, July 1993.

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FIGURE ES-4

MISSING VALUE RATES FOR STATE LICENSE NUMBER BY CARRIER

Less than 22 percent		22 to 44 percent		Greater than 44 percent	
10250 Travelers Ins. Co.	MS				
10240 Travelers Ins. Co.	MN				
00865 Pennsylvania BS	PA				
10490 Travelers Ins. Co.	VA				
01290 Aetna Life & Casualty	NV				
16510 Nationwide Ins. Co.	WV				
00801 BS of Western NY	NY				
00528 Arkansas BC/BS	LA				
00803 Empire BC/BS	NY				
00650 Kansas BS	KS				
00655 Kansas BS	NE				
00860 Pennsylvania BS	NJ				
16360 Nationwide Ins. Co.	OH				
00910 Utah BC/BS	UT				
00751 Montana BC/BS	MT				
00870 Rhode Island BS	RI				
00740 Kansas BS	MO-KS				
05440 Connecticut General	TN				
14330 Group Health Ins., Inc.	NY				
05535 Connecticut General	NC				
00621 Illinois BC/BS	IL				
00951 Wisconsin Physician Serv.	WI				
00720 Minnesota BC/BS	MN				
00590 Florida BC/BS	FL				
00820 North Dakota BC/BS	SD-ND				
00550 Colorado BC/BS	CO				
00640 Iowa BS	IA				
00880 South Carolina BC/BS	SC				
00932 Washington Physician Serv.	WA	01360 Aetna Life & Casualty	OR		
00973 S.S.S.	PR	00780 C&S Admin. Services	NH		
00510 Alabama BC/BS	AL	01370 Aetna Life & Casualty	OK		
00542 California BS	No. CA	01360 Aetna Life & Casualty	NM		
00630 Indiana BC/BS	IN	10074 Travelers-RRB-UT	RRB		
00660 Kentucky BC/BS	KY	00690 Maryland BS	MD	00781 C&S Admin. Services	VT
00710 Michigan BC/BS	MI	01030 Aetna Life & Casualty	AZ	10230 Travelers Ins. Co.	CT
00825 North Dakota BC/BS	WY	10072 Travelers-RRB-GA	RRB	00700 C&S Admin. Services	MA
00900 Texas BC/BS	TX	01020 Aetna Life & Casualty	AK	21200 C&S Admin. Services	ME
00974 S.S.S.	VI	00570 Pennsylvania BS	DE	00520 Arkansas BC/BS	AR
02050 Transamerica Occidental	So. CA	01120 Aetna Life & Casualty	HI	11260 Missouri Gen. Amer. Life	MO
05130 Connecticut General	ID	00580 Pennsylvania BS	DC	01040 Aetna Life & Casualty	GA

NOTE: For each column, the carriers with the highest values are at the top.

SOURCE: Physician Registry, July 1993.

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ES3.2 Logical Inconsistencies Between Data Elements

We investigated the extent to which there are logical inconsistencies between pairs of data elements (Chapter 5, *Carrier Analysis*). An example of a logical inconsistency is when the provider status data element indicates that the provider is a physician or an osteopath while the provider credential data element indicates that the provider is an optometrist. In each comparison between pairs of data elements, over 95 percent of the records had consistent values. Comparisons between practice setting versions of data elements were limited to active practice settings.

Most of the inconsistencies between pairs of data elements are due to missing information (i.e., one value is present and the other is missing). This is especially evident with regard to sanction dates, length of sanction, and school code. It seems that carriers usually knew if a provider was sanctioned prior to the Registry's implementation, but in many cases did not know the sanction date nor the length of sanction.

In some cases, only a few carriers account for most inconsistencies:

(1) North Dakota BC/BS (North and South Dakota) and Group Health Insurance, Inc. (New York) account for over 85 percent of the inconsistencies between sanction code and sanction date and between sanction code and sanction length. About 20 percent of North Dakota's practice settings have inconsistent sanction information while nearly seven percent of Group Health's practice settings have inconsistent sanction information.

(2) California BS accounts for about a third of the inconsistencies between credential and primary specialty, as well as a third of the inconsistencies between physician status and primary specialty. Such inconsistencies are present in about one percent of its practice settings.

(3) The two RRB carriers account for nearly half of inconsistencies between the provider's graduation year and the year that a medical school opened or closed. Such inconsistencies are present in about 1.5 percent of their practice settings.

ES3.3 Consistency Across Practice Settings

We investigated the extent to which provider information is identical across active practice settings (Chapter 6, *Carrier Analysis*). Inconsistencies have implications both for *Registry* operations and for research using *Registry* data. Conflicting dates of birth, for instance, call into question the integrity of the UPIN as a *unique* identifier. Analyses were performed (1)

to determine the extent of inconsistent values and (2) to determine the feasibility of "migrating" feasible data from one practice setting to those with missing or infeasible values. The analyses were performed on data elements that should have the same value across all of a provider's practice settings.

We first determined the percentage of providers that have only *missing* values present on all of their active practice setting records. We found the following:

(1) Six percent of providers have only missing values for date of birth on all of their practice settings. For 12 carriers, more than ten percent of providers have missing birth dates for all their practice settings.

(2) Seven percent of providers have only missing values for school code on all practice settings. For 13 carriers, more than ten percent of their providers have missing school codes for all practice settings.

(3) About nine percent of providers have only missing values for graduation year for all practice settings. For 16 carriers, more than ten percent of providers have missing graduation years for all practice settings.

For comparisons between *feasible* values only, we determined the percentage of providers having values that are not the same across all active practice settings. We found as follows:

(1) Seven percent of providers have inconsistent feasible values for full birth date across practice settings. For Kentucky BC/BS, 28 percent of providers have inconsistent birth dates across practice settings. For another 17 carriers, between five and ten percent of their providers have inconsistent dates of birth across their practice settings.

(2) Eleven percent of providers have inconsistent feasible values for school code across practice settings. For eight carriers, more than ten percent of providers have inconsistent school codes across practice settings.

(3) About ten percent of providers have inconsistent, yet feasible values for graduation year. For seven carriers, more than ten percent of providers have inconsistent graduation years.

(4) About three percent of providers have inconsistent, yet feasible values for provider credentials. For two carriers, more than three percent of providers have inconsistent credentials.

We also determined the percentage of providers having a mix of both feasible values and missing values across their active practice settings. The base for this calculation was the

number of providers having either (1) all missing values, (2) all feasible values or (3) a mix of feasible and missing values. We found as follows:

(1) About 28 percent of providers have a mix of feasible and missing values for birth date.

(2) Thirty percent of providers have a mix of feasible and missing values for school code.

(3) About 33 percent of providers have a mix of feasible and missing values for graduation year.

Our results indicate that carriers have either not attempted to eliminate inconsistencies in data elements across practice settings; or they have not transmitted the results of data "cleaning" to the *Registry*. Exclusion of the RRB carriers reduces the inconsistency rates by a third to a half.

ES3.4 Consistency Between Header and Practice Setting Data Elements

Header data elements are integral to Registry operations. In particular, header information is used as the first step in the process of determining whether to issue a new UPIN. Discrepancies between feasible values of header and practice setting versions of common data elements raise questions about the general accuracy of the Registry. To determine the consistency of common data elements, comparisons were conducted only when both values were feasible (Chapter 7, *Carrier Analysis*). Our findings are:

(1) Nearly three percent of the birth dates on practice settings are not the same as that indicated from the header. For five carriers, over five percent of practice setting birth dates are not the same.

(2) Five percent of the practice setting school codes are not the same as that indicated from the header. For three carriers, over ten percent of the practice setting school codes are not the same. For another 23 carriers, between five and ten percent of the school codes are not the same.

(3) About 4.5 percent of the practice setting graduation years are not the same. For 25 carriers, over five percent of the graduation years are not the same.

ES4.0 INAPPROPRIATE ISSUANCE OF UPINs

Only one UPIN should be issued to a provider and only individual providers should have UPINs. Accordingly, we conducted a study to determine the potential number of providers with multiple UPINs. We also conducted a study to investigate the potential issuance of UPINs to group practices.

ES4.1 Providers with Multiple UPINs

To detect cases of multiple UPINs, a "screener" variable (SCREENER) was created by concatenating several variables to form a new variable (Chapter 8, *Carrier Analysis*). When two or more UPIN records were found to have identical SCREENERs, a multiple-UPIN case was "suspected".[2]

The results of eight variations on SCREENER produced a range of 2,617 to 25,308 "potential" multiple-UPIN cases (first column of Table ES-1). For samples of potential cases, provider data from each of the eight SCREENER variants were visually examined in order to estimate the percentages of cases that might be false positives (second column of Table ES-1). This was done in order to obtain more precise estimates for the number of potential multiple-UPIN cases. After accounting for "false positives", 2,198 to 11,642 providers were estimated to have more than one UPIN (third column of Table ES-1). These cases need further investigation to determine whether they actually represent cases in which more than one UPIN has been issued to a provider.

Based on our visual inspection of multiple-UPIN cases, there appear to be two principal causes for the issuance of more than one UPIN to a given provider. The first is that first initial of the first name is different. This is often due to use of a nickname or middle name on one record and the formal name on the other record. We also found slight variations in the spelling of provider last names.

Selected characteristics of the suspected multiple-UPIN cases are presented in Table ES-2. Most of the cases involve multiple carriers. While most of them involved physicians and osteopaths, other providers were over-represented. Other providers account for 11 percent of

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[2]SCREENER relied primarily on the date of birth and the last name of the provider. Variants of SCREENER also included the first letter of the provider's first name and the provider's credential. The *full* variant of SCREENER included, in order: date of birth, the first three letters of the last name, the first letter of the first name, LNAMESUM, and credential. LNAMESUM is the sum of the numbers assigned to the consonants in the last name. Since many names begin with the same three letters, LNAMESUM was used to reduce the number of cases detected by SCREENER that, upon further inspection, are not multiple-UPIN cases (false positives). Except for the credential, all variables were taken from the header section of a record. This was done to minimize problems due to practice setting variation.

TABLE ES-1

NUMBER OF POSSIBLE CASES WITH MULTIPLE UPINS

Screener Elements	C.A.I. Potential Number of Cases	Estimated Percent of false Positives	Net Potential Number of Cases
DOB,L1_3,F1,LNAMESUM,CREDENTIAL	2,617	16 %	2,198
DOB,L1_3,LNAMESUM,CREDENTIAL	5,702	22	4,448
DOB,L1_3,F1,CREDENTIAL	3,960	16	3,326
DOB,L1_3,CREDENTIAL	16,214	42	9,404
DOB,L1_3,F1,LNAMESUM	3,530	14	3,036
DOB,L1_3,LNAMESUM	8,201	26	6,069
DOB,L1_3,F1	5,540	20	4,432
DOB,L1_3	25,308	54	11,642

Abbreviations:

C.A.I. - Computer Algorithm Identified
DOB - Date of Birth
L1_3 - First 3 letters of last name
F1 - First letter of first name
LNAMESUM - Sum of the numbers assigned to the consonants in the last name
CREDENTIAL - Provider credential (MD, DO, DDM, DDS, DPM, OD or CH)

SOURCE: Physician Registry, July 1993.

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TABLE ES-2

CHARACTERISTICS OF POSSIBLE MULTIPLE UPIN CASES

	SCREENER Elements				*SCREENER Elements*			
	DOB,L1_3, F1,LNAMESUM, Credential	DOB,L1_3, LNAMESUM, Credential	DOB,L1_3,F1, Credential	DOB,L1_3, Credential	DOB,L1_3, F1,LNAMESUM	DOB,L1_3, LNAMESUM	DOB,L1_3,F1	DOB,L1_3
Total Number of Multiple UPIN Cases	2,617	5,702	3,960	16,214	3,530	8,201	5,540	25,308
Multiple UPIN Cases by Presence of Multiple Carriers								
Solo Carrier	755	1,332	942	1,875	845	1,503	1,067	2,192
Multiple Carriers	1,862	4,370	3,018	14,339	2,685	6,698	4,473	23,116
Physician Status (over all UPINs)								
MD, DO	3,363	8,540	5,259	28,897	4,906	11,807	7,538	39,386
All Others	1,887	2,991	2,705	4,387	2,190	[illegible],671	3,632	13,332
Number of UPINs per Multiple-UPIN Case								
2 UPINs	2,601	5,580	3,916	15,415	3,494	7,947	5,451	23,446
3 UPINs	16	117	44	743	36	234	88	1,650
4 UPINs	0	5	0	55	0	18	1	185
5 UPINs	0	0	0	1	0	2	0	26
6 UPINs	0	0	0	0	0	0	0	1
Number of Multiple Carrier Cases in which RRB Carriers Present								
10072 - RRB Georgia	633	831	824	1,296	941	1,190	1,167	1,872
10074 - RRB Utah	480	786	638	1,290	768	1,134	949	1,816

NOTES: See Table ES-1 for definitions of SCREENER elements.
Because of inconsistencies in the value of physician status between practice settings, the total number of UPINs involved in the multipe-UPIN cases, instead of the number of cases themselves are presented in Table ES-2 for physician status.

SOURCE: Physician Registry, July 1993.

practice settings; but they represent from 13 to 36 percent of the potential multiple UPINs. The number of UPINs involved in each multiple-UPIN case range from two to six, with the vast majority of cases involving only two UPINs. The RRB carriers were also over-represented.

Even after accounting for the false positives, the number of multiple-UPIN providers could very well exceed 11,000. A labor-intensive review will be required to determine the actual number of multiple-UPIN providers. The estimated number of multiple-UPIN cases would, no doubt, be even higher if birth dates were available for the nearly ten percent of providers that have missing or erroneous values.

ES4.2 Group Usage of UPINs

We have developed and tested a methodology for investigating potential issuance of UPINs to group practices (Chapter 2 of this report). UPINs should only to be issued to individual providers. In particular, UPINs should not be issued to group practices or corporations for billing or any other purpose.

Our methodology for investigating issuance of UPINs to group practices relies on the identification of high Medicare volume providers. A group practice's claims volume should substantially exceed that of the typical individual provider. If a group practice has four providers, for example, we would anticipate their claims volume is, on average, four times greater than that of a single provider.

Providers with more than 9,000 claims or more than $400,000 in total allowed charges during a nine month period were selected for examination. In our sample of 27,358 providers, 218 met the criteria we used to define high volume. Three providers had more than 40,000 claims in nine months. While 40,000 claims in nine months is high, the high volume might be the result of the utilization of physician extenders. Similarly, while ten providers had very high total allowed charges (e.g., one to two million dollars), the amounts are not infeasible for a single provider.

We examined the practice characteristics of the 218 providers using *Registry* data in an effort to find evidence of the issuance of UPINs to groups. A visual check of the 218 names revealed that all of the names appear to be personal names. The typical provider, among the 218, had three active practice settings, although 34 providers had more than five active practices. The number of different primary specialties per provider was not improbably high, with a mean of 1.33 specialties and a high of three specialties for active practice settings. We found only five possible cases of potentially incongruous multiple specialties.

We must conclude that *Physician Registry* data elements of high-volume Medicare providers provide no conspicuous evidence that the associated UPINs have been issued to

group practices. Although some providers have very high volume, we find no *prima facie* evidence that group practices are included among the high volume providers examined. We believe, nevertheless, that high Medicare volume is the best indicator that a UPIN is potentially in use for more than one provider.

ES5.0 FINDINGS FROM OTHER STUDIES

We also performed two other studies: (1) we examined the consistency in coding of Medicare participation status between *Registry* data and Part B physician claims data (Chapter 3 of this report); and (2) estimated the number of salaried HMO physicians treating Medicare beneficiaries (Chapter 1 of this report).

ES5.1 Medicare Participation Status

To encourage providers to accept assignment for all Medicare beneficiaries treated, HCFA gives preferential treatment (e.g., a five percent higher payment rate) to providers who sign a *participation* agreement. Both beneficiaries and HCFA benefit from widespread *participation* by providers. Beneficiaries receiving care from participating providers are not liable for balance billing (i.e., charges greater than the allowed amount), although they are still liable for standard Medicare deductibles and co-insurance. To the extent that beneficiaries receive all of their Part B care from participating providers, they may have somewhat lower out-of-pocket expenses.

To determine the potential effect of participation status on Medicare expenditures, we conducted two analyses. First, we examined the quality and consistency of participation status coding in both the *Registry* and physician Part B claims. Second, an exploratory analysis of the relationship between participation status and Medicare volume was performed.

For each provider, two composite variables were created that indicate participation status across *all* practice settings. One of these was based on *Registry* data and the other was based on claims data. Both composite participation status variables had three values: (1) always, (2) never, and (3) mixed. *Always* indicates that the provider participates in all practice settings. *Never* indicates that the provider does not participate in any practice setting. *Mixed* indicates that the provider participates in some practice settings but not others.

The major findings from this analysis are:

(1) The values of the participation status data element reported in the *Registry* and available from the claims data are, as a practical matter, always feasible.

(2) The high level of coding quality, however, is not matched when values derived from one data set are compared to those from the other.

- Of the 6,877 providers whose *Registry* data indicate that they "always" participate, 5,761 (91.9 percent) had claims data also indicating that they "always" participate.
- Of the 10,381 provider whose *Registry* data indicate that they "never" participate, only 58.6 percent also have claims data that indicate that they "never" participate.
- Of the 9,588 providers whose *Registry* data indicate *mixed* participation status, only 21.4 percent also have claims data that indicate *mixed* participation status.

The presence of practice settings in *Registry* data that are actually de-activated, even though not so indicated in the *Registry*, could account for some of the inconsistencies. Carrier confusion about the differences between participation status and assignment could be another source of inconsistencies between the two data sets. Time lags between the claims service date and processing date could be an additional factor.

Theoretical analysis suggests that providers with an *always* participation status would have higher Medicare volume than providers with a *never* participation status. Likewise we had anticipated that providers with a *mixed* participation status would have Medicare volumes falling between *always* and *never*. We tested this hypothesis by examining, for each specialty, average Medicare volume by participation status (based on claims data). Two measures of Medicare volume were calculated – the mean number of claims and the mean aggregate allowed charges. Our hypothesis was not supported by the results that show that providers with a *mixed* participation status have the highest mean number of claims and mean aggregate allowed charges in two-thirds of the specialties; possibly because, for *mixed* providers, their overall work effort is greater since they have more practice settings.

ES5.2 HMO Physicians without UPINs

The *Registry* contains information on all medical doctors and other providers that have UPIN; and it is the main source of information for ascertaining the number of physicians that treat Medicare beneficiaries[3]. While the *Registry* captures most physicians treating Medicare beneficiaries, it does not include, by definition, physicians that do not have UPINs. Physicians without UPINs are either (1) those not treating Medicare beneficiaries or (2) salaried HMO physicians not required to have UPINs. To supplement Registry-based estimates of physicians treating Medicare beneficiaries, we have estimated the number of salaried HMO physicians who do not have UPINs but <u>are</u> treating Medicare beneficiaries.

Using unpublished 1993 Group Health Association of America (GHAA) HMO physician staffing data and 1993 InterStudy HMO enrollment data, we first estimated the number of salaried HMO physicians within staff and staff-type model HMOs. We then found from HMO interviews that many require UPINs for all plan physicians, regardless of whether or not HCFA requires them. Based on these interviews, we suggest that only 20 percent of HMO physicians working for staff-type HMOs with risk- or cost-based Medicare contracts do not have UPINs. We then applied this estimate to our estimate of the number for salaried HMO physicians. In so doing, we calculate that about 3,000 HMO physicians do not have UPINs.

Almost half of the staff model HMO physicians without UPINs are located in Region IX (California, Arizona, Hawaii, and Nevada).

ES6.0 CARRIER AND RESEARCHER EDITS

To assist carriers with the maintenance of their provider files, we have developed three types of edit algorithms: (1) ones to detect missing, erroneous, dubious, and unknown values of data elements, (2) ones to detect logically inconsistent values between pairs of data elements and (3) ones to detect providers with more than one UPIN.

The algorithms were designed to detect data element values that either do not conform to the *Physician Registry's* specifications or meet minimum quality standards. Edits were developed for data elements whose combined MEDU rates exceeded 0.5 percent. In addition, algorithms were designed for all pairs of data elements investigated in the logical consistency analysis.

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[3]Some physicians that have UPINs do not treat Medicare beneficiaries every year. That is, these physicians may treat Medicare beneficiaries on a very intermittent basis. This is probably most true for obstetricians and gynecologists.

Data integrity specifications, flowcharts, and SAS computer programs have been developed to assist programmers in implementing the edit algorithms.[4] Data integrity specifications are also provided to guide data entry personnel in resolving data errors and inconsistencies.

A set of edits to be used by researchers in using *Registry* data were developed.[5] Data integrity specifications, flowcharts, and SAS computer programs have been prepared for this purpose.

ES7.0 KEY FINDINGS AND CONCLUSIONS

The high rates of missing and erroneous values for several data elements (i.e., date of birth, school code, and graduation year) in the *Registry* master file are largely attributable to (1) problems experienced in the implementation phase (2) subsequent changes in data element status from optional to required, and (3) the lack of retrospective editing. The rates of missing and erroneous values for new provider practice settings have declined as TOLIC has tightened its on-line data edits and the carriers have increased the accuracy of submitted data.

All of the carriers indicated that it would be an enormous and costly effort to retrospectively correct data problems existing in their current provider files, even for active practice settings only. Since they already have a carrier-assigned Provider Identification Number (PIN) for their practice setting, some providers, especially solo practitioners and older providers, are unresponsive to carrier information requests. Thus, the single biggest problem in trying to correct existing data is that carriers have leverage on providers to submit the required data *only when* the provider initiates a new practice setting application.

One of the computerized algorithms used to detect providers with more than one UPIN found 25,000 potential cases representing nearly 53,000 individual UPINs. After a review of a sample cases, we estimated that as many as 11,000 providers have more than one UPIN. A labor-intensive review will be required to determine the actual number of multiple-UPIN providers. If the actual number of providers with multiple UPINs is 11,000 then about 1.5 percent of providers have more than one UPIN.

The RRB carriers account for a disproportionately large share of the problems found in the *Registry* data. They continue to experience difficulties in obtaining high quality data from providers. While their MEDU rates have declined, they still have substantially higher MEDU

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[4]Unique Physician Identification Number (UPIN) Validation Studies: Carrier Edits, HCFA Master Contract No. 500-92-0020, Delivery Order No. 5, May 27, 1994.

[5]Unique Physician Identification Number (UPIN) Validation Studies: Researcher Edits, HCFA Master Contract No. 500-92-0020, Delivery Order No. 5, August 24, 1994.

rates than other carriers. Because they are obliged to submit incomplete records to the *Registry*, they account for a disproportionately large share of the *Registry* staff's time. RRB carriers also appear to be over-represented among potential multiple-UPIN cases. Given these difficulties, the role of RRB carriers in *Registry* operations possibly warrants reconsideration.

1.0 SALARIED HMO PHYSICIANS TREATING MEDICARE BENEFICIARIES

1.1 Introduction

Not all physicians that treat Medicare beneficiaries are required to have UPINs. While UPINs are required for physicians who bill Medicare for Part B services, UPINs are not necessarily required for salaried physicians in staff or staff-type HMOs that only have at-risk or cost-based contracts with HCFA. These HMOs do not submit individual claims to HCFA for their Medicare beneficiaries enrolled on an at-risk or cost basis. Within these HMOs, physicians who are not also billing traditional Medicare are not required by HCFA to have UPINs.

The *Physician Registry* contains information on all medical doctors and other providers[1] that have UPINs, and it provides the number of physicians who have applied for Medicare billing numbers, most of whom, but not all, appear to be providing services to Medicare beneficiaries.[2] While the *Registry* captures most physicians treating Medicare beneficiaries, it does not include, by definition, physicians that do not have UPINs. Physicians without UPINs are either (1) those not treating Medicare beneficiaries or (2) salaried HMO physicians not required to have UPINs. We are interested herein in estimating the number of salaried HMO physicians who do not have UPINs but are treating Medicare beneficiaries.

Through on-site interviews with staff and staff-type HMOs, we found that salaried HMO physicians may be required to have UPINs for many reasons. In the first instance, a salaried physician would be required to have a UPIN if he/she is also billing Medicare for patient services provided outside of the HMO setting (i.e. if he/she also has a private practice). A salaried physician may also be required to have a UPIN if his/her HMO does not have a risk or cost contract for Medicare. HMOs that are not risk- or cost-contract HMOs bill HCFA for individual Medicare claims, and therefore their physicians must have UPINs. Finally, and most importantly, a salaried physician may be required by the HMO itself to have a UPIN, even if it is not required by HCFA.

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[1] The *Physician Registry* also contains information on osteopaths, podiatrists, chiropractors, and other limited license practitioners. For this analysis, we are only interested in MDs.

[2] Physicians that obtain a UPIN might not submit Medicare claims to HCFA during a given year.

All of the risk- and cost-contract HMOs which we contacted maintain some UPIN requirement.[3] UPINs are often required in order that salaried physicians can treat and bill for non-member Medicare beneficiaries on an *ad hoc* basis. Such situations occur, for instance, when (1) an HMO member brings a relative to the HMO for treatment or (2) non-members seek services on a walk-in basis.

UPIN requirements, however, do not necessarily mean that all salaried physicians within the HMO have UPINs. Requirements may only apply to new doctors, (e.g., Harvard Community Health Plan); or the HMO may only follow up on compliance with such requirements periodically. Such practices may vary from one HMO to another. Based on estimates provided by HMO staff during the interviews, we estimate that 80 percent of salaried MDs in staff or staff-type HMOs have UPINs.

In this analysis, we focus on salaried physicians within staff and staff-type model HMOs with risk- or cost-based contracts. Except for a few physicians that might also have a private practice, physicians in these HMOs are not required by HCFA to have UPINs. Our goal is to estimate the number of salaried HMO physicians who are treating Medicare beneficiaries, but are not in the Physician Registry, by estimating the number of salaried HMO physicians without UPINs. In doing so, we hope to provide HCFA with a better understanding of how many medical doctors currently in practice are accepting Medicare patients.

Our analysis provides both estimates of the number of salaried HMO physicians and the number with and without UPINs. These estimates are provided at a regional and national level. Because our estimates are derived from national averages of physician to total enrollee ratios, we expect our results to be most accurate at the national level.

1.2 Methodology

Our analysis is divided into two parts. First, we estimate the number of salaried HMO physicians within staff and staff-type model HMOs. Second, we estimate the number of salaried HMO physicians with and without UPINs. Our data sources included unpublished 1993 Group Health Association of America (GHAA) HMO physician staffing and enrollment data for 19 survey respondents from their 1993 survey of group and staff model HMOs, as well as 1993 InterStudy HMO enrollment data. For each group of physicians, primary care and specialists, we estimated the number that have and do not have UPINs.

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[3] We interviewed Humana Health Care Plans of Chicago, FHP of California, Kaiser Permanente of southern California, and Harvard Community Health Plan of Brookline, Massachusetts.

1.2.1 HMO Sample and Physician Groupings

We included in our analysis only HMOs that have risk- or cost-based contracts with HCFA. These include staff models or group models with a large salaried physician component (i.e., Kaiser Foundation Health Plans). In determining which HMOs were risk- and/or cost-based contracts, we consulted the September 1993 Monthly Report of Medicare Prepaid Health Plans. For these HMOs, we obtained total enrollment from the InterStudy Competitive Edge, 1994.

Our physician staffing data[4] was obtained from a sample of nineteen HMOs provided by GHAA from their 1993 GHAA Clinical Staffing Survey. This survey was conducted among group and staff model HMOs which are members of GHAA[5]. The staff-to-group ratio of the nineteen HMOs in our sample is comparable with that of the HMO industry as a whole.

On several points, however, the nineteen HMOs in our sample are not wholly representative of the industry. The HMOs in our sample, for example, are larger, on average, than staff and group model HMOs industry-wide. Moreover, 94 percent of the HMOs in our sample serve Medicare beneficiaries, compared to 28 percent of all staff and group model HMOs. The regional distribution is not representative. HMOs of the Northeast and West regions are over-represented in our sample. Approximately 32 percent of the 19 HMOs are from the Northeast, compared with 19 percent industry-wide. HMOs from the South comprised only 11 percent of our sample, whereas they comprise 20 percent nationally. Midwest HMOs are 15.8 percent of our sample compared to 29 percent nationally. HMOs in the West are over-represented at 42 percent of our sample compared to 22 percent nationally. In spite of these selection biases, this data was the best available at the time of analysis.

Our analysis focuses exclusively on medical doctors. We divided the medical doctors into two major categories (1) primary care physicians and (2) specialists. Primary care physicians consisted of general internal medicine (IM), general or family practice (GP or FP), obstetrics/gynecology (OB/GYN), and general pediatrics (PED). Specialists included anesthesiology, cardiology, pathology, and all other medical doctors not included in primary care.

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[4] Physician staffing data was used to calculate "Average Ratio of Salaried Physicians to Enrollees" and "Average Ratio of Salaried Physicians to Total Physicians" in Table 1-1.

[5] Approximately 78 percent of all group and staff model HMOs nationwide were GHAA members in 1993.

According to the interviews we conducted with various HMOs, the probability that these MDs treat Medicare beneficiaries is close to one. (The HMOs themselves do not report such data.) Although one might expect OB/GYNs and pediatricians to treat Medicare patients less frequently than other MDs, we do not have data to support a separate analysis for these physicians. In this analysis, we assume that all physicians within staff model HMOs treat Medicare beneficiaries.

1.2.2 Salaried Physician Estimates

In forming salaried physician estimates, we used unpublished physician staffing data from the GHAA 1993 survey of group and staff model HMOs. From 19 survey respondents[6], we calculated the mean ratio of total MDs to enrollees and the mean ratios of each physician group, primary care and specialists, to total MDs. Among primary care physicians, we calculated the mean ratios of each group of MDs (IM, PED, OB/GYN, and GP or FP) to total MDs.

Once we calculated mean ratios of total MDs to enrollment from GHAA data, we used the national enrollment for staff and staff-type HMOs obtained from InterStudy to estimate the total numbers of salaried MDs. The formula is as follows:

$$\text{Salaried MDs}_{\text{Estimate}} = (\text{Physician/Enrollee})_{\text{GHAA}} \times \text{Total Enrollees}_{\text{InterStudy}}$$

Next, we used ratios obtained from GHAA data of primary care MDs to total MDs, specialists to total MDs, and so forth, to estimate the number of physicians for each subgroup.

According to the GHAA data, 53 percent of all salaried MDs are primary care physicians. The largest group of salaried MDs in primary care were IM and GP/FP, and they were approximately 31 percent of the total salaried MD population. Pediatricians and OB/GYNs each constituted 11 percent of all salaried MDs in staff or staff-type HMOs, respectively. The remainder of MDs, specialists, comprised 47 percent of the total salaried physician population.

The 1993 HMO salaried physician staffing data we obtained from GHAA did not identify individual HMOs. Therefore, we were not able to investigate regional variations in staffing to enrollment ratios. Given this constraint, we used the same estimated ratios of physicians to enrollees in all of our calculations - i.e., for both regional and national estimates.

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[6]GHAA survey data included 22 group and staff model HMOs. Nineteen HMOs provided reliable data for our analysis.

The regional groupings of the HMOs in our analysis are based on the ten major regions used by the Office of Prepaid Health Care Operations and Oversight in their monthly reports of Medicare Prepaid Health Plans. While these regional groupings do not present regional variations in physician staffing ratios or UPIN estimates, they do provide a general idea of salaried physician concentration across regions.

1.2.3 UPIN Estimates

From our interviews with group and staff model HMOs, we know that UPIN requirements are common. At Kaiser Permanente of Southern California, for example, they require all their physicians to have UPINs. Nevertheless, they estimated that only 82 percent of their physicians do actually have UPINs. FHP reported that UPINs were required by all their physicians, but 25 percent of their doctors still lacked them. From these reports, it appears that UPIN requirements are common to staff and staff-type HMOs.

HMO UPIN requirements do not necessarily mean that all MDs immediately obtain UPINs. There may be a considerable amount of "start up" time involved in assuring that all salaried doctors have UPINs. Humana Health Care Plans had been obtaining UPINs for its physicians since April of 1992, and for those MDs who did not have them, Humana would obtain them. In September, 1993, they estimated that 95 percent of their doctors had UPINs. However, we checked their roster of salaried MDs against the *Registry* and found that only 36 percent of their salaried MDs had UPINs. The percentage was higher among IMs, FPs/GPs and OB/GYNs, but lower for pediatricians and specialists.

The interviewed HMOs reported that UPIN requirements are now part of the employment application process. For doctors who have been employed with the HMO prior to the UPIN requirement, the responsibility to obtain UPINs appears to rest more with the administrative staff, diminishing the physicians' incentive to follow up such requirements. Some HMOs, e.g., Kaiser Permanente of Southern California, monitor the numbers of MDs without UPINs, though they reported that approximately 18 percent of their physicians were still without UPINs. While a precise estimate is not possible, all considered, we estimated that 80 percent of MDs had UPINs and 20 percent did not.

1.3 Estimates of Salaried HMO MDs With and Without UPINs

1.3.1 National

National results are presented in Table 1-1. Using GHAA data, we derived a national average ratio of total salaried physicians to enrollees. The total HMO enrollment for staff and staff-type models, derived from The 1994 InterStudy Competitive Edge, was approximately 12.3 million, and multiplying this by the GHAA physician-enrollee ratio, we estimated 15,346 salaried MDs nationally. From these 15,346 salaried MDs, we estimated that 80 percent, or 12,277, had UPINs and 20 percent, or 3,069, did not. Among the 53 percent, or 8,143, of total MDs that were primary care physicians, we estimated that 80 percent, or 6,507 had UPINs. Conversely, we estimated that 20 percent, or 1,627 primary care MDs did not have UPINs. Specialists comprised 47 percent of total salaried MDs, or 7,213 physicians. Of these, we estimated that 80 percent, or 5,770, had UPINs and that 20 percent, or 1,443, did not.

1.3.2 Regional

Salaried HMO physician estimates aggregated to the regional level are presented in Table 1-2. First, we estimated the total numbers of salaried physicians within each region. Not all states had an HMO with a risk- or cost-based contract, but all regions had at least one such HMO. Just under half (46 percent) of all salaried MDs, or 7,113, are located in Region Nine, which includes Arizona, California, Hawaii, and Nevada. Region Two, including New York and New Jersey, had the second largest concentration of salaried MDs at approximately 11 percent, or 1,669, of total salaried physicians. Region Five included Illinois, Indiana, Michigan, Minnesota, and Ohio, and it comprised approximately 10 percent, or 1,584, of all salaried physicians. Region One, New England, had nine percent of the total salaried physicians at 1,380 MDs. Although there were only three HMOs with risk- or cost-based contracts in Oregon and Washington, Region Ten, 7.6 percent (or 1,179) of all salaried MDs are employed there.

The remaining five regions had estimated salaried physician populations amounting to less than six percent of the national salaried MD population. We estimated that Region Four, including Florida, Tennessee, Georgia, and North Carolina, employed just under five and a half percent of all salaried physicians, or 835. Colorado, Utah, and North Dakota were included in Region Eight, and their salaried physician population was estimated to be approximately 3.8 percent of the total at 593 physicians. Region Three included six states (Pennsylvania, West Virginia, Maryland, District of Columbia, and Virginia), yet it only contained 3.6 percent, or 561, of all salaried MDs. We estimated New Mexico, Oklahoma, and Texas employed 2.1

TABLE 1-1

ASSUMPTIONS AND PARAMETER ESTIMATES FOR SALARIED MDs IN RISK- OR COST-CONTRACT HMOs

		Average Ratio of Salaried Physicians to Enrollees	Estimated Number of Salaried Physicians
National Enrollment for Staff and Staff-type HMOs	12,313,574		
Total Physicians		0.001246302	15,346
Probability of having UPINs	80%		12,277
Probability of not having UPINs	20%		3,069

		Average Ratio of Salaried Physicians to Total Physicians	Estimated Number of Salaried Physicians
Primary Care			
Total		0.53	8,134
General IM		0.17	2,609
General or Family Practice		0.14	2,148
OB/GYN		0.11	1,688
General Pediatrics		0.11	1,688
Probability of having UPINs	80%		6,507
Probability of not having UPINs	20%		1,627
Specialty care			
Total specialists		0.47	7,213
Probability of having UPINs	80%		5,770
Probability of not having UPINs	20%		1,443

NOTES: Probabilities of having UPINs for primary care physicians and specialists based on 1993 HMO site visits conducted by HER, Inc. Numbers may not add up to totals due to rounding.

SOURCE: Unpublished GHAA physician staffing data from their 1993 HMO group and staff model survey; The InterStudy Competitive Edge 1994. Calculations by Health Economics Research, Inc.

TABLE 1-2

1993 SALARIED PHYSICIAN ESTIMATES AND PROBABILITY OF HAVING UPINs FOR STAFF AND GROUP MODEL HMOs: REGIONAL GROUPINGS

	REGION									
	1	2	3	4	5	6	7	8	9	10
	Boston	New York	Philadelphia	Atlanta	Chicago	Dallas	Kansas City	Denver	San Francisco	Seattle
Total Physicians	1380	1669	561	835	1584	321	111	593	7113	1179
without UPINs	276	334	112	167	317	64	22	119	1423	236
Primary Care										
Total	731	884	297	442	840	170	59	314	3770	625
without UPINs	146	177	59	88	168	34	12	63	754	125
IM, GP, FP	428	517	174	259	491	99	35	184	2205	366
without UPINs	86	103	35	52	98	20	7	37	441	73
OB/GYN	152	184	62	92	174	35	12	65	782	130
without UPINs	30	37	12	18	35	7	2	13	156	26
PED	152	184	62	92	174	35	12	65	782	130
without UPINs	30	37	12	18	35	7	2	13	156	26
Specialists										
Total	649	784	264	392	745	151	52	279	3343	554
without UPINs	130	157	53	76	149	30	10	56	669	111

NOTES: Numbers may not add up to totals due to rounding. Numbers of MDs without UPINs based on 20% probability of not having a UPIN taken from HMO interviews.

SOURCE: Unpublished GHAA physician staffing data from their 1993 group and staff model HMO survey; The Interstudy Competitive Edge 1994. Calculations by Health Economics Research, Inc.

percent of all salaried physicians, or 321, in Region Six. Less than one percent of salaried physicians, or 111, were employed in Region Seven. Although it included Kansas, Missouri, and Nebraska, Region Seven had only one HMO which had a risk- or cost-based Medicare contract.

From these numbers, we calculated the numbers without UPINs based on a 20 percent probability that salaried MDs would not have UPINs. The number of MDs without UPINs varies directly with the estimated number of salaried MDs in each region. Because the largest concentration of salaried physicians was in Region Nine, it also had the highest number of MDs without UPINs, at 1,423. The total numbers of MDs without UPINs varied considerably, for the minimum was 22 in Region Seven. We also estimated the numbers of salaried primary care and specialist MDs, and these also varied directly with the physician estimates.

1.4 Conclusions

We know from our interviews with HMOs that many HMOs require UPINs for all of their physicians, regardless of whether or not HCFA requires them. With the full implementation of such policies, the *Physician Registry* could successfully account for all physicians treating Medicare beneficiaries. At present, we estimate that 20 percent of almost all salaried physicians working in HMOs with risk- or cost-based Medicare contracts do not have UPINs and are not counted in the total number of medical doctors accepting Medicare patients.

Our analysis suggests that out of approximately 15,000 salaried physicians in staff-type HMOs, 3,000 do not have UPINs. Almost half of these physicians are in Region Nine, representing California, Arizona, Hawaii, and Nevada. Assuming that almost all doctors in these HMOs are treating Medicare patients, these 3,000 doctors without UPINs should be added to the total number of doctors in the *Physician Registry* to get a national estimate of physicians treating Medicare patients.

2.0 INVESTIGATION OF POTENTIAL MISASSIGNMENT OF UPINs TO GROUP PRACTICES

In this chapter, we develop and test a methodology for investigating potential issuance of UPINs to group practices. UPINs should only to be issued to individual providers. At this writing, UPINs should not be issued to group practices or corporations for billing or any other purpose. In the following section, our methodology for investigating whether "group" UPINs exist is described. The results of this test methodology are presented in the last section.

2.1 Methodology to Detect Potential UPIN Misassignment

Our methodology for investigating the possible issuance of UPINs to group practices relies on the identification of high Medicare volume providers. The claims volume for the typical group practice should substantially exceed that of the typical individual provider.[1] If a group practice has four providers, for example, we would expect their claims volume to be, on average, four times higher than that for an individual provider. If the Medicare volume distribution per individual provider looks like distribution A in Figure 2-1, that for group practices might look like distribution B. Thus, if group practices are indeed using a single UPIN for billing purposes, they should account for a disproportionate share of the high volume providers.

To operationalize the above concepts, a threshold value was chosen such that providers whose volume exceeds that threshold were examined for evidence that the UPINs had been assigned to group practices. If groups were using UPINs, the threshold value should be chosen, as in Figure 2-1, such that few individual providers would exceed it and group practices would be over-represented among those that do. Two measures of UPIN-specific volume were used: (1) the total number of line-item claims and (2) the aggregate value of allowed charges.

In defining threshold values, we must recognize that the Medicare share of total practice varies with some providers treating only Medicare beneficiaries while others treat very few. Thus, to avoid the inclusion of too many individual providers and account for varying Medicare practice shares, threshold values were set to "very high" values – namely, about ten times higher than their means.

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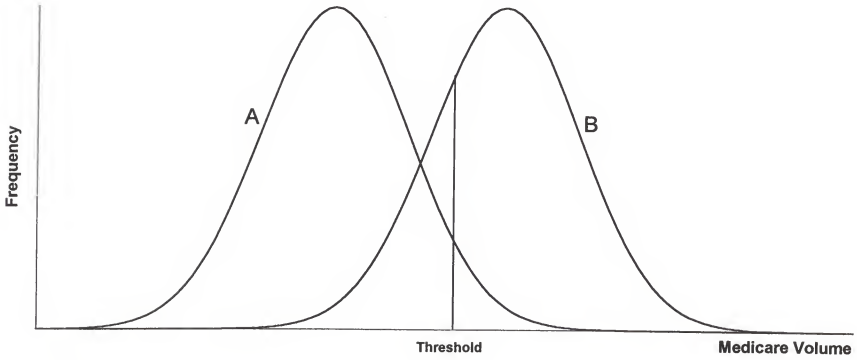
[1] In this instance, *individual* is not synonymous with *solo*. That is, *individual* refers to the use of a UPIN by just one provider, regardless of whether the provider is a solo practitioner or a member of a group practice.

FIGURE 2-1

HYPOTHETICAL DISTRIBUTIONS OF MEDICARE VOLUME PER PROVIDER



Notes:
A: Distribution for individual providers.
B: Distribution for group practices.

upin\finalrpt\[NORMDIST.XLW]Figure 2-1a

2.2 Results of Implementing Medicare Volume Checks

2.2.1 Data

Claims data from the *1992 Part B Physician Sample* were used in the analysis. The claims data are based on a randomly drawn sample of physicians, some 27,358 providers. For each state, a set of randomly selected two-digit numbers was chosen and then matched to the two terminal digits of UPINs to select the physician sample.[2] The claims file consists of over 28 million line-item claims in final action form, drawn from the National Claims History (NCH). Claims from the first quarter of 1992 were not used in constructing either volume measure.[3] Provider information came from the September 1992 *Physician Registry* (HCFA's version).[4]

Two measures of claims volume were constructed from the claims data. For each UPIN, the number of line-item claims was counted; and, for each UPIN, the allowed charges were aggregated. The means and distributions for each measure were determined. Selected *Physician Registry* data elements were then linked to the aggregate volume measures as described below.

2.2.2 Results

The mean number of claims[5] per provider and total allowed charges per provider, as calculated from the claims data, are shown in Table 2-1. The mean three-quarter year number of claims is 910, and the mean total allowed charges is $45,855. UPINs with either 9,000 or more claims or more than $400,000 in allowed charges were selected for further examination. As can be seen from the distributional parameters reported in Table 2-1, less than one percent of providers have values that exceed these thresholds.

We found 218 providers whose claims volume exceeded 9,000 or whose total aggregate allowed charges exceeded $400,000. Of these, there were 81 with more than 9,000 claims – of

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[2]HCFA, *Sample Design for the 1992 Physician Sample*, June 1994.

[3]This data sample was designed for use in both this chapter and the next chapter. The first quarter claims had to be excluded because of the requirements of the next chapter's Medicare provider participation (PAR) analysis. Specifically, the first quarter claims were not selected for analysis because of the possible lag in updating PAR status in carrier provider files.

[4]For a description, see Section 3.1 of the Unique Physician Identification Number (UPIN) Validation Studies: Carrier Analysis, HCFA Master Contract No. 500-92-0020, Delivery Order No. 5, August 23, 1994.

[5]For the rest of this chapter and the next chapter, whenever the phrase *number of claims* is used, it refers to the number of line-item claims instead of the number of claims forms submitted.

TABLE 2-1

DISTRIBUTION OF LINE-ITEM CLAIMS AND ALLOWED CHARGES

Percentile	Number of Claims	Allowed Charges
100 (Maximum)	42,778	$2,136,726
99	6,406	332,507
95	3,513	169,972
90	2,482	117,554
75	1,160	59,008
50 (Median)	373	20,277
25	86	3,818
10	13	559
5	4	153
1	1	30
0 (Minimum)	1	2
Mean	910	45,855
Standard Deviation	1,448	76,329

NOTE: 27,358 observations (providers).

SOURCE: HCFA, 1992 Part B Physician Sample (Final Action Form).

which six had more than 15,000 claims and three had more than 40,000 claims. To generate 40,000 claims in nine months, a provider would have a very heavy workload indeed. For instance, if a provider worked all 39 weeks, five days per week, and 14 hours per day, the provider would have to generate about 15 Medicare claims per hour in order to have a total of 40,000 claims for the period. While 40,000 claims for nine months is high, the high volume might be the result of the utilization of physician extenders. Therefore, the high volumes that we found are not, *per se*, indicative of the use of UPINs by group practices.

There were 163 providers with more than $400,000 in total allowed charges. Ten providers, of which five were ophthalmologists, had more than $1 million in total allowed charges. There were another 22 providers with total allowed charges between $750,000 and $1 million. The highest value of aggregate allowed charges was $2.1 million. Based on anecdotal evidence, this amount, while high, is not infeasible for an individual provider. On the other hand, if group practices were using a single UPIN for billing, then we might expect to find many more cases of this type.

For the 218 providers with unusually high Medicare volume, their name fields, credentials, DRIP status, and specialty were obtained from the *Physician Registry* file and listed for visual inspection. A visual check of the 218 names revealed that all of the names appear to be personal names. The typical provider, among the 218, had three active practice settings, although 34 providers had more than five active practices.[6] The number of different primary specialties per provider was not improbably high, with a mean of 1.33 specialties and a high of three specialties for active practice settings.[7] We found only five possible cases of potentially incongruous multiple specialties, as listed below (with specialty codes in parentheses):

- thoracic surgery (33) and family practice (08);
- cardiology (06) and nephrology (39);
- general practice (01) and ophthalmology (18);
- ophthalmology (18), general practice (01), and internal medicine (11); and

[6]The number of providers with more than five *truly* active practice settings might be overstated. Since providers often do not notify carriers when a practice setting is no longer active, carriers often have difficulty determining if and when a practice setting is no longer active. Some carriers (e.g., Pennsylvania Blue Shield) de-activate practice settings if there has not been any claims activity during the prior two years. Other carriers, however, do not perform any systematic review of their provider file and, thus, have non-current data in their files. Finally, of the 738 active practice settings for the 218 providers, 137 are from the two Railroad Retirement Board (RRB) carriers. In most instances, the RRB records represent duplicate information for a physical location.

[7]Carrier coding errors might be responsible for some cases of multiple specialties as when family practice and general practice are both indicated as specialties for a given provider.

- family practice (08) and ophthalmology (18).

The cases involving ophthalmology could be due to keystroke errors. In the third and fourth cases above, *18* might have been inadvertently keyed instead of *08* (family practice); and, in the fifth case, *08* might have been keyed instead of *18*. With regard to the fourth case, another possibility is that *01* was keyed instead of *11*.

The four most frequently occurring specialties among the high volume providers were ophthalmology (32 percent), internal medicine (21 percent), cardiology (12 percent), and radiology (nine percent).[8] Relative to total Part B spending, all four were over-represented, especially ophthalmology and cardiology.[9] Nevertheless, none of this is necessarily indicative of the use of a UPIN by a group practice.

We must conclude that *Physician Registry* data elements of high-volume Medicare providers provide no conspicuous evidence that the associated UPINs have been issued to group practices. Although some providers have very high volume, we find no *prima facie* evidence that group practices are included among the high volume providers examined. We believe, nevertheless, that high Medicare volume is the best indicator that a UPIN is potentially being used by more than one provider.

Providers identified as "high volume" should be investigated to ascertain whether the provider is indeed a group practice or whether the UPIN and underlying identifiers are being mistakenly (both intentionally and unintentionally) used in some way.[10]. Ideally, an on-site practice audit or detailed provider information maintained by carriers would be used to verify provider status. We recommend that HCFA perform practice audits on providers that have more than one million dollars in total Medicare allowed charges per year or 50,000 line-item claims per year to further answer this concern.

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[8]For multiple specialty providers, the modal specialty was used. In the event of a "tie," the first-listed specialty was chosen.

[9]Zuckerman and Norton (Table 4, 1994) list the 20 specialties with the highest Medicare spending. In 1990, these 20 specialties accounted for 74 percent of total Part B spending. Among the 20 specialties, internal medicine accounted for 18.5 percent of spending, ophthalmology – 13.1 percent, radiology – 10.3 percent, and cardiology – nine percent. We multiplied these shares by .74 in order to have values comparable to ours. Note, however, that 25 percent of the high volume providers we found were identified by the number of claims measure rather the "spending" measure.

[10]Inadvertent use of an UPIN might result if a carrier erroneously mapped a group PIN to an individual UPIN.

3.0 COMPARISON OF PARTICIPATION STATUS ON THE PHYSICIAN REGISTRY AND IN THE NATIONAL CLAIMS HISTORY

To encourage providers to accept assignment for all Medicare beneficiaries treated, HCFA gives preferential treatment (e.g., a five percent higher payment rate) to providers that sign a *participation* agreement. Both beneficiaries and HCFA benefit from widespread *participation* by providers. Beneficiaries receiving care from participating providers are not liable for balance billing (i.e., charges greater than the allowed amount), although they are still liable for standard Medicare deductibles and co-insurance. To the extent that beneficiaries receive all of their Part B care from participating providers, they may have somewhat less out-of-pocket expenses.

Under carriers' provider identification systems, individual physicians often have multiple provider identification numbers (PINs), and members of group practices may use group practice PINs. Prior to the establishment of the *Physician Registry*, this made it difficult to assess individual physician responses to changes in Medicare reimbursement policies. UPINs now give policy-makers the ability to determine the extent to which providers *participate* in all of their practice settings, and allow for the systematic study of the relationship between participation status and Medicare reimbursement policies.

This chapter investigates the quality of participation status coding in HCFA data and the feasibility of using "participation status" in future analytic studies. We begin by examining the quality and the consistency of participation status coding in both the *Registry* and physician Part B claims. An exploratory analysis of the relationship between participation status and Medicare volume is then presented in the subsequent section.

3.1 Coding Quality

3.1.1 Physician Registry

Each November, carriers send to providers a form which providers use to indicate whether they agree to accept assignment for all Medicare beneficiaries treated in a specific practice setting.[1] Providers who agree to accept assignment for all beneficiaries are said to *participate*. A solo provider with multiple practice settings should have the same participation status in all settings. Providers that belong to different group practices, however, may *participate* in some practice settings but not others. Carriers forward the participation status for each practice setting to the *Registry*.

[1] A provider's previous participation status is not changed by carriers if the provider fails to return the form.

We examined "participation status" as reported in the September 1992 version of the *Registry*. The participation status data element (*PAR*) has two feasible values: (1) *Y* for YES and (2) *N* for NO. Of the nearly 1.7 million practice settings on the file, only one did not have a feasible value.

3.1.2 Claims Data

During the processing of Part B physician claims, carriers should use participation status as recorded on their provider files to help determine payment. Incorrect application of participation status can lead to the over- or underpayment of claims. Overpayment of claims increases Medicare program costs. Underpayment of claims, on the other hand, is likely to be disputed by providers. Increased claims processing costs are the result of such appeals.

As the next step in determining the overall quality in coding of participation status, we examined "participation status" as recorded on claims data. NCH claims data from the *1992 Part B Physician Sample* (Final Action Form) were used in the analysis.[2] A participation status variable (NPAR) appears on all physician and supplier claims as recorded in the Common Working File. The description of "provider participation" in the NCH documentation is: "Code indicating whether or not a provider is participating or accepting assignment for this line item on the Part B claim." Unlike PAR, NPAR is a combination of PAR and whether the physician accepted assignment. In addition, as seen below, the NCH participating provider code embodies information on whether some or all of the expenses were applied to the deductible. The NCH coding of provider participation is as follows:

1. Participating
2. All or some covered and allowed expenses applied to deductible – participating
3. Assignment accepted – Non-participating
4. Assignment not accepted – Non-participating
5. Assignment accepted but all or some covered and allowed expenses applied to deductible – Non-participating
6. Assignment not accepted and all covered and allowed expenses applied to deductible – Non-participating
7. Participating provider not accepting assignment.

[2]See Chapter 2 for a brief description of the file.

To determine whether NPAR only had one of the above seven values, the first five million line-item claims were examined. No values other than the seven above were found.[3]

3.1.3 Consistency of Participation Status between the *Physician Registry* and Claims Data

The consistency in the coding of participation status between the *Registry* data and the claims data is investigated in this section. Given multiple practice settings for providers in the *Registry* and the seven different codes indicating participation status in the NCH data, inconsistencies between measures of participation status derived from the two types of records could exist. Most providers, for instance, have more than one practice setting and many are serviced by more than one carrier. A mistake in coding participation status could easily arise, for example, because a provider did not inform a carrier that a practice setting was no longer active and that the participation status for the practice setting does not reflect the provider's current participation status. It is even easier to make a mistake in properly recording participation status in claims data. With seven possible values for NPAR and an average of over 900 claims per provider (Table 2-1), it is not difficult for claims processing errors to occur.

For each provider, two composite variables were created that indicate participation status across *all* practice settings. One of these (UPAR) is based on *Registry* data and the other (CPAR) is based on claims data. To lower computer processing time for this analysis and those in subsequent sections, we constructed an "aggregated" claims file. For each provider (UPIN), two measures of claims volume by participation status were constructed from the claims data. First, the number of line-item claims for each UPIN was counted. Second, the allowed charges for each UPIN were aggregated. Values of each volume measure were calculated for each value of NPAR, as well as overall. For each provider, for instance, the number of claims with NPAR equal to one (1) were counted (summed) and the allowed charges were aggregated. Similarly, the number of claims and allowed charges were aggregated for the other values of NPAR. For each provider, the overall volume measures were determined by summing across NPAR values. Claims from the first quarter of 1992, however, were not used because of concern that there might be a lag in provider response to the prior November's survey of provider participation status. Consequently, the claims used in the analysis came from the last three quarters of 1992 and were based on date of service delivery (rather than the processing date).

Both composite participation status variables have three values: (1) always, (2) never, and (3) mixed. *Always* indicates that the provider participates in all practice settings. In order

[3]Of the five million claims checked, only 3,084 (.06 percent) had an NPAR value of seven.

for UPAR to equal *always* for a given provider, PAR must equal *Yes* for each practice setting. In order for CPAR to equal *always* for a given provider, NPAR must equal codes 1, 2 or 7 on all of the submitted claims. *Never* indicates that the provider does not participate in any practice setting. In order for UPAR to equal *never* for a given provider, PAR must equal *No* for each practice setting. In order for CPAR to equal *never* for a given provider, NPAR must equal code 3, 4, 5, or 6 on all of the submitted claims. *Mixed* indicates that the provider participates in some practice settings but not others. In order for UPAR to equal *mixed* for a given provider, at least one value of PAR must equal *No* and at least one value of PAR must equal *Yes*. In order for CPAR to equal *mixed* for a given provider, NPAR must equal code 1, 2, or 7 on at least one claim and, NPAR must equal code 3, 4, 5, or 6 on at least one claim.

Two variants of UPAR were constructed, one for all practice settings and the other for *active* practice settings only. The UPAR variant for all practice settings was created because of the possibility that a de-activated practice setting in the September 1992 *Registry* file had been active earlier in the year. When restricted to active practice settings, the number of providers with a *mixed* status declines and the numbers of providers with *always* and *never* status increase.[4]

To determine the degree of consistency between UPAR and CPAR, these two variables were cross-tabulated (Table 3-1). Nearly 26 percent of the providers, as measured by UPAR, had an *always* participation status, 38.7 percent had a *never* participation status, and 35.7 percent had a *mixed* participation status. Using CPAR as the measure of participation status, 57.9 percent of the providers had an *always* participation status, 26.9 percent had a *never* participation status, and 15.1 percent had a *mixed* participation status. The values on the diagonal of Table 3-1 indicate the number of providers whose *Registry* and claims participation status are the same – only 53.7 percent of providers had the same participation status. Conversely, the off-diagonal values of Table 3-1 indicate the number of providers whose *Registry* and claims participation status are the same – 46.7 percent of providers.

Of the 6,877 providers (active practice settings only) whose *Registry* data indicated that they "always" participated, 5,761 (91.9 percent) of them had claims data that also indicated that they "always" participated. This high degree of agreement was not matched for those with *never* and *mixed* participation status. Only 58.6 percent of providers whose *Registry* data indicated that they "never" participate have claims data that also indicate that they "never" participate. The degree of agreement for providers with *mixed* participation status was even worse. Only 21.4 percent of providers whose *Registry* data indicate *mixed* participation status

[4]The total number of providers decreases by 173 when de-activated settings are excluded. Another 339 UPINs that were in the claims file were not in the *Registry* file. Together, these two figures account for the difference in total providers indicated in Tables 2-1 and 3-1.

TABLE 3-1

CONSISTENCY OF MEDICARE PARTICIPATION CODING STATUS BETWEEN PHYSICIAN REGISTRY AND CLAIMS DATA

Claims Participation Status	REGISTRY PARTICIPATION STATUS			
	Always	Never	Mixed	Total
Always	6,295 (91.5)	2,740 (26.4)	6,517 (68.0)	15,552 (57.9)
Never	121 (1.8)	6,086 (58.6)	1,020 (10.6)	7,227 (26.9)
Mixed	461 (6.7)	1,555 (15.0)	2,051 (21.4)	4,067 (15.1)
Total	6,877 (25.6)	10,381 (38.7)	9,588 (35.7)	26,846

NOTES:

1. "Always" denotes that the provider agreed to participate in Medicare's assignment program for all practice settings.
2. "Never" denotes that the provider does not participate in Medicare's assignment in any practice setting.
3. "Mixed" indicates that the provider participates in Medicare's assignment program in some practice settings but not others.
4. Numbers in parentheses are column percentages, except for the last row which are row percentages.

SOURCES: HCFA, 1992 Part B Physician Sample (Final Action Form) and the September 1992 Physician Registry File.

also had claims data that indicated *mixed* participation status. Similar results obtain when all practice settings are used instead of just active practice settings.

Providers with an *always* participation status (based on UPAR) have fewer practice settings (1.72 on average) than those with a *never* participation status (1.94) and a *mixed* participation status (3.78). Thus, some part of the lesser agreement for *mixed* providers could be attributable to the predictable increase of data inconsistency when providers have more practice settings. The low degree of consistency for *mixed* providers could also arise because carriers have difficulty determining when practice settings become inactive. Thus, there could be practice settings for which participation status is set to *No*, which are not truly active practice settings. If so, this could account for the finding that 68 percent of providers whose UPAR value was *mixed* had a CPAR value of *always*. Similarly, failure to update participation status on active practice setting records in the carrier's provider file could account for the inconsistencies.

To better understand the low degree of consistency for the *never* participation status, the percentage of claims submitted as *participating* were analyzed. For each provider, using claims data, the percentage of claims submitted as participating (NPAR = 1, 2, or 7) was calculated. Mean participating percentages were then calculated by specialty and *Registry* participation status (UPAR). For providers whose *Registry's* participation status was *always*, over 97 percent of the claims were submitted as *participating* (Table 3-2). Mean participating percentages ranged from a high of 100 percent for several specialties to a low of 91.1 percent for chiropractors.

We had expected that the mean participating percentages would be high for providers with the *always* participation status and that the mean participating percentages would be very low for providers with the *never* participation status. We found, however, that about 31 percent of the claims, on average, were submitted as *participating* by providers whose *Registry's* participation status was *never*. Mean participating percentages for providers with a *never* participation status on the *Registry* ranged from a high of 100 percent for nuclear medicine to a low of 9.4 percent for chiropractors. It seems likely that the carriers are confusing assignment with participation status. If so, this would be peculiar since participation status is part of the computerized provider file maintained by each carrier. One possible explanation is that, for some carriers, participation status on the provider file is *not* being used when determining participation status during claims processing. Another likely factor is failure to update the PAR status variable on the *Registry* even though the carrier's provider file was updated.

TABLE 3-2

MEAN PERCENTAGE OF CLAIMS CODED "AS PARTICIPATING" BY SPECIALTY AND REGISTRY PARTICIPATION STATUS OF THE BILLING UPIN

Specialty Code	Name	Overall	REGISTRY PARTICIPATION STATUS Always	Never	Mixed
	ALL	65.95 %	97.36 %	31.46 %	79.83 %
01	General Practice	65.96	96.46	26.65	80.41
02	General Surgery	74.66	98.90	39.70	86.90
03	Allergy/Immunology	55.88	97.48	21.70	78.75
04	Otolaryngology	59.51	98.65	24.56	77.43
05	Anesthesiology	66.06	97.14	39.31	79.79
06	Cardiology	77.22	99.15	53.57	79.37
07	Dermatology	67.22	98.42	28.08	83.80
08	Family Practice	61.81	98.41	29.36	70.74
10	Gastroenterology	77.43	99.89	39.94	87.95
11	Internal Medicine	68.06	97.52	37.18	76.64
12	Osteo. Manipulative Therapy	62.51	99.30	14.14	74.98
13	Neurology	71.32	97.46	42.82	76.18
14	Neurosurgery	66.27	97.49	29.79	82.62
16	Obstetrics/Gynecology	67.44	96.96	33.11	83.17
18	Ophthalmology	69.93	99.14	31.68	85.12
19	Oral Surgery (Dentists only)	34.08	93.88	18.38	70.54
20	Orthopedic Surgery	70.13	97.93	35.25	85.89
22	Pathology	81.25	99.72	56.70	86.56
24	Plastic and Reconstructive Surgery	68.77	99.94	37.35	81.92
25	Physical Medicine and Rehabilitation	81.96	96.34	48.60	89.66
26	Psychiatry	58.85	93.29	28.23	71.63
28	Colorectal Surgery	62.93	100.00	36.09	90.93
29	Pulmonary Disease	80.00	100.00	46.22	82.79
30	Diagnostic Radiology	80.54	98.09	47.22	81.15
33	Thoracic Surgery	79.17	99.94	46.38	88.24
34	Urology	71.32	98.94	33.39	84.76
35	Chiropractic	32.80	91.09	9.36	84.09
36	Nuclear Medicine	78.26	99.99	100.00	71.30
37	Pediatric Medicine	63.55	98.63	35.57	69.51
38	Geriatric Medicine	78.30	100.00	58.33	88.37
39	Nephrology	86.35	97.57	64.01	87.74
41	Optometry	67.29	97.57	25.34	86.91
44	Infectious Disease	77.21	100.00	56.38	74.36
46	Endocrinology	56.34	97.66	31.12	82.16
48	Podiatry	67.97	98.57	30.78	89.47
49	Misc. (Ambulatory Surg Ctr)	79.10	99.70	66.55	84.62
66	Rheumatology	48.92	100.00	34.21	51.94
70	Clinic/Other Grp Practice, except GPPP	79.47	99.99	67.19	88.10
83	Hematology/Oncology	73.34	99.98	49.57	79.70
90	Medical Oncology	50.68	99.97	33.14	65.07
92	Radiation Oncology	82.51	100.00	60.46	80.60
93	Emergency Medicine	83.89	99.01	76.00	81.34

NOTE: Registry Participation Status refers to the mix of participation statuses among the UPIN's practice setting records.

SOURCE: HCFA, 1992 Part B Physician Sample (Final Action Form) and September 1992 Physician Registry File.

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3.2 Medicare Volume by Participation Status

In this section we undertake an exploratory analysis of Medicare volume by participation status. Unlike the previous chapter and previous sections of this chapter, this analysis was not undertaken to assess data quality *per se*. Rather, it was performed, in part, to assess the degree to which analyses could be conducted relying solely on *Registry* and Medicare claims data. Another reason for performing this analysis was to contribute to the understanding of participation decisions by physicians.

Theoretical analysis of the provider's participation decision suggests that providers with an *always* participation status would have higher Medicare volume than providers with a *never* participation status (c.f., Sloan, Cromwell, and Mitchell, 1978). It is predicted that providers with an *always* participation status have, *ceteris paribus*, more Medicare patients than providers with a *never* participation status. Providers with more Medicare patients need to attract Medicare beneficiaries in order to have sufficient patient volume to cover operating expenses. Providers with few non-Medicare patients, therefore, have to offer incentives, such as agreeing to accept assignment for all Medicare claims, to attract Medicare patients. Conversely, providers with many non-Medicare patients need fewer Medicare beneficiaries to cover operating expenses and are, thus, less likely to offer incentives to attract Medicare beneficiaries. Providers with an *always* participation status are thus hypothesized to have more Medicare beneficiaries associated claims volume than providers with a *never* participation status. It is further reasonable to expect that providers that have a *mixed* participation status would have Medicare volume that falls between *always* and *never*. This hypothesis is partially tested herein using the Part B claims data. Because Medicare volume varies by specialty, the mean number of claims and the mean aggregate allowed charges were calculated separately for each specialty by participation status.[5]

The hypothesized relationship of Medicare volume by participation status is not strongly supported from our results (Tables 3-3 and 3-4). In 29 of the 42 specialties, the mean number of claims is highest for providers with a *mixed* participation status. In contrast, in only seven specialties is the mean number of claims the highest for providers with an *always* status. In some instances, providers with the *never* participation status had higher claims volume than providers with the *always* participation status. For internal medicine, for example, not only was the mean number of claims for the *always* providers lower than the mean for the *mixed* providers, but it was also lower than the mean for the *never* providers. Only four specialties

[5]Specialty was obtained from the most recently added active practice setting on the *Registry* for each provider. Specialties with 21 or fewer providers in the sample were not included in the analysis.

TABLE 3-3

AVERAGE NUMBER OF CLAIMS BY SPECIALTY AND CLAIMS PARTICIPATION STATUS

Specialty Code	Name	Overall	CLAIMS' PARTICIPATION STATUS Always	Never	Mixed
	All	925	917	754	1,260
01	General Practice	1,005	962	1,028	1,134
02	General Surgery	527	511	544	584
03	Allergy/Immunology	710	617	694	904
04	Otolaryngology	633	690	500	749
05	Anesthesiology	243	246	208	297
06	Cardiology	1,765	1,625	1,808	2,061
07	Dermatology	1,663	1,714	1,404	1,946
08	Family Practice	1,122	1,101	1,117	1,186
10	Gastroenterology	973	951	954	1,097
11	Internal Medicine	1,622	1,420	1,869	1,973
12	Osteo. Manipulative Therapy	1,060	1,244	664	1,095
13	Neurology	669	630	639	795
14	Neurosurgery	238	240	214	278
16	Obstetrics/Gynecology	126	127	117	144
18	Ophthalmology	1,387	1,433	1,152	1,593
19	Oral Surgery (Dentists only)	32	29	32	61
20	Orthopedic Surgery	685	692	647	707
22	Pathology	919	906	879	1,044
24	Plastic and Reconstructive Surgery	197	203	170	216
25	Physical Medicine and Rehabilitation	860	817	796	1,085
26	Psychiatry	291	314	188	441
28	Colorectal Surgery	568	515	682	564
29	Pulmonary Disease	1,600	1,419	2,256	2,020
30	Diagnostic Radiology	2,106	2,008	2,075	2,417
33	Thoracic Surgery	462	463	450	475
34	Urology	1,760	1,807	1,741	1,632
35	Chiropractic	223	265	201	260
36	Nuclear Medicine	1,432	1,572	1,474	1,103
37	Pediatric Medicine	113	140	41	294
38	Geriatric Medicine	1,554	1,370	1,827	1,911
39	Nephrology	1,611	1,676	1,563	1,346
41	Optometry	211	251	118	250
44	Infectious Disease	681	553	1,116	922
46	Endocrinology	1,297	1,255	1,646	763
48	Podiatry	1,239	1,371	883	1,337
49	Misc. (Ambulatory Surg Ctr)	591	390	1,043	833
66	Rheumatology	2,572	1,781	3,583	2,626
70	Clinic/Other Grp Practice, except GPPP	585	498	498	938
83	Hematology/Oncology	2,851	2,752	2,632	3,209
90	Medical Oncology	3,236	2,335	2,607	5,292
92	Radiation Oncology	1,671	1,765	967	1,909
93	Emergency Medicine	388	352	270	560

NOTE: Claims Participation Status refers to the mix of participation statuses among the UPIN's claims data in the 1992 Part B Physician Sample. (See text for further description.)

SOURCE: HCFA, 1992 Part B Physician Sample (Final Action Form) and September 1992 Physician Registry File.

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TABLE 3-4

MEAN ALLOWED CHARGES PER PROVIDER BY SPECIALTY AND CLAIMS PARTICIPATION STATUS

Specialty Code	Name	Overall	CLAIMS' PARTICIPATION STATUS Always	Never	Mixed
	All	$46,272	$49,793	$30,585	$60,768
01	General Practice	29,922	31,340	24,288	35,028
02	General Surgery	54,680	55,577	47,559	60,541
03	Allergy/Immunology	17,720	17,539	14,254	22,929
04	Otolaryngology	32,837	37,851	23,181	37,662
05	Anesthesiology	34,431	35,131	30,755	38,430
06	Cardiology	125,362	121,991	113,883	136,953
07	Dermatology	65,599	68,191	48,393	87,491
08	Family Practice	28,580	29,298	25,075	31,795
10	Gastroenterology	98,182	102,263	77,219	101,877
11	Internal Medicine	58,510	56,576	55,740	67,949
12	Osteo. Manipulative Therapy	36,801	47,078	16,790	35,048
13	Neurology	42,401	40,754	38,797	49,489
14	Neurosurgery	51,880	55,017	45,042	51,107
16	Obstetrics/Gynecology	6,709	6,829	6,004	7,978
18	Ophthalmology	172,511	184,523	128,767	195,141
19	Oral Surgery (Dentists only)	2,085	2,094	1,924	6,294
20	Orthopedic Surgery	65,457	65,678	62,007	69,048
22	Pathology	42,022	42,315	34,477	49,004
24	Plastic and Reconstructive Surgery	23,709	25,053	19,153	26,158
25	Physical Medicine and Rehabilitation	37,967	36,600	29,361	50,510
26	Psychiatry	16,273	17,535	11,136	23,238
28	Colorectal Surgery	62,384	62,561	64,302	57,228
29	Pulmonary Disease	77,410	73,163	92,565	87,413
30	Diagnostic Radiology	80,349	79,074	64,741	92,865
33	Thoracic Surgery	163,522	165,418	146,833	171,838
34	Urology	113,443	117,754	102,246	111,745
35	Chiropractic	4,517	5,864	3,828	5,379
36	Nuclear Medicine	106,769	119,890	108,643	76,779
37	Pediatric Medicine	4,174	5,430	1,483	7,621
38	Geriatric Medicine	53,729	53,074	61,449	49,369
39	Nephrology	126,507	136,013	80,754	107,042
41	Optometry	8,870	10,395	4,256	15,490
44	Infectious Disease	38,499	30,437	68,116	51,885
46	Endocrinology	40,128	35,577	52,733	29,576
48	Podiatry	36,001	40,923	23,668	37,473
49	Misc. (Ambulatory Surg Ctr)	22,490	17,123	34,546	28,886
66	Rheumatology	54,800	44,066	65,580	60,577
70	Clinic/Other Grp Practice, except GPPP	30,633	26,064	34,079	43,914
83	Hematology/Oncology	105,634	98,918	103,205	122,639
90	Medical Oncology	136,036	108,614	114,465	202,111
92	Radiation Oncology	180,964	193,754	82,314	216,969
93	Emergency Medicine	19,943	19,045	14,456	25,506

SOURCE: HCFA, 1992 Part B Physician Sample (Final Action Form) and September 1992 Physician Registry File.

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(osteopathic manipulative therapy, chiropractic therapy, optometry, and podiatry) had the hypothesized relationship of *always* being highest, followed in order by *mixed* and *never*.

The results for aggregate allowed charges are similar to those for aggregate claims. For 26 of the 42 specialties, mean aggregate allowed charges are highest for providers with the *mixed* participation status. In only nine specialties is the mean number of claims the highest for providers with an *always* status.[6] For example, the mean aggregate allowed charges for ophthalmologists with *mixed* participation status was $195,141, while for providers who *always* participate it was $184,523. Of the nine specialties for which *always* was the highest, eight had the hypothesized relationship (otolaryngology, gastroenterology, osteopathic manipulative therapy, neurosurgery, urology, chiropractic therapy, nephrology, and podiatry).

3.3 Summary and Conclusions

The values of the participation status data element reported in the *Physician Registry* and available from the claims data are, as a practical matter, always feasible. The high level of coding quality, however, is not matched when values derived from one data set are compared to those from the other. The presence of practice settings in *Registry* data that are actually de-activated, even though not so indicated in the *Registry*, could account for some of the inconsistency. Another possibility is that, unlike the interviewed carriers, other carriers might not updating participation status on their provider file or not updating participation on their *Registry* records. Carrier confusion about the differences between participation status and assignment could also be a source of inconsistency between the two data sets.

Another possible reason for the inconsistencies could be due to the fact the RRB records were used in constructing the participation status variable based on the *Registry* file, but not in the participation status variable based on the claims data. That is, we were not aware of the exclusion of RRB claims from the claims data at the time the analysis was performed. As noted in Chapter 4, the two RRB carriers often have difficulty in obtaining accurate data from providers. Inaccurate PAR status on the RRB *Registry* records, therefore, might account for some of inconsistencies that were found.

The hypothesized relationship between participation status and Medicare volume was not supported in our explanatory analysis. In most specialties, providers with a *mixed* participation status have the highest mean number of claims and mean aggregate allowed

[6]When *always* is compared just to *never*, for the mean number of claims, *always* is higher in 23 of the 42 specialties and, for the mean aggregate allowed charges, *always* is higher in 32 of the 42 specialties. These results also do not strongly support the hypothesized relationship between participation status and Medicare volume.

charges. One possible explanation is that because *mixed* providers have more practice settings, their overall work effort is probably greater.

4.0 REVIEW OF CARRIER AND PHYSICIAN REGISTRY OPERATIONS

This chapter describes the UPIN operations of carriers and the *Physician Registry* contractor, Transamerica Occidental Life Insurance Company (TOLIC).[1] The discussion focuses on operational aspects as they bear on the quality of *Registry* data. Prior to describing current operations of the carriers and TOLIC, however, a brief review of the implementation phase of the *Registry* is presented. Carrier operations are next described, followed by a review of Railroad Retirement Board (RRB) carrier operations. A review of TOLIC's *Registry* operations follows the description of carrier operations.

The information presented in this chapter is based almost entirely on site visits conducted during August and September, 1993 – a visit to the TOLIC *Registry* in Los Angeles and six site visits to Medicare carriers. The carriers visited were (1) C & S Administrative Services, which covers Maine, Massachusetts, New Hampshire, and Vermont; (2) TOLIC in its capacity as a carrier for southern California; (3) Pennsylvania Blue Shield (BS), which covers Delaware, the District of Columbia, New Jersey, and Pennsylvania; (4) Illinois Blue Cross/Blue Shield (BC/BS); (5) Florida BC/BS; and (6) the Travelers Insurance Company's RRB operations in Georgia. Supplementary information was obtained via follow-up phone calls.

4.1 A Review of the Implementation Phase of the Physician Registry[2]

The implementation phase of the *Physician Registry* occurred during the five month period from January through May 1989. During this period TOLIC had to process over 1.2 million records submitted by 57 carriers.[3] Several of the Registry's required data elements had not formerly been collected by some carriers. Carriers, nevertheless, were instructed by HCFA not to directly contact providers to obtain required data elements not in their provider files.[4] Nor were carriers allowed to obtain such information from copyrighted sources. For the date of birth, a required data element, carriers were allowed to submit just the year portion of the date, if they did not have the complete date. Other data elements (e.g., school code, graduation

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[1]Some of the material in this chapter was previously presented in Chapters 1, 2, and 8 of the *Carrier Analysis* deliverable for *Unique Physician Identification Number (UPIN) Validation Studies*, HCFA Master Contract No. 500-92-0200, (August 23, 1994).

[2]Some of the material in this section is drawn from a letter from Transamerica to HCFA (March 4, 1994).

[3]The two RRB carriers did not submit records to TOLIC during the initial phase.

[4]This restriction was removed after the implementation phase.

year, and state license number) were not mandatory during the implementation phase. Since carriers were not provided additional funding to develop incomplete records, it was understood that carriers would be submitting records with incomplete information.

4.2 Carrier Operations

The UPIN duties of carriers are centered about their provider file. Prior to the establishment of the *Registry*, each carrier's provider file was (and continues to be) integral to their overall claims processing duties. Included in the maintenance of the provider file is the issuance of carrier-assigned provider identification numbers (PINs). Carriers issue PINs to ensure payment to the appropriate provider. It was partly because each carrier had their own system of PINs, however, that the *Registry* was established.

Current UPIN duties *per se* do not require much attention from the carriers. Nevertheless, the implementation phase and subsequent change in making some data elements *required* instead of *if available* presented problems for certain carriers.

We begin our description of carrier operations with a discussion of the problems encountered by carriers during the implementation phase and later – namely, problems of obtaining data for data elements which had hitherto not been required. We then briefly describe the types of provider information collected. This is followed by a discussion of the current sources of provider information and the difficulties encountered by carriers in obtaining it. We describe, next, how carriers process the information in preparation for submission to the Registry. Carrier PIN issuance policies are then described. This is followed by a discussion of UPIN workloads and provider file staffing. We conclude with a brief discussion of UPINs and claims processing.

4.2.1 Carrier Experiences During the Implementation Phase

All of the carriers admitted to experiencing difficulties during the implementation phase. Many of the problems encountered by carriers at this time were the origin of many data problems detailed in Chapter 4 of the *Carrier Analysis*. Some technical problems (e.g., use of personal computers and modems) were not significant sources of data problems but, nevertheless, were problems that required the attention of carrier management.

Several *Registry* data elements required by HCFA had not previously been collected by some carriers (e.g., date of birth). For the initial batch submission of data to the *Registry*,

therefore, the carriers were directed to obtain new required data elements. Because of HCFA regulations, however, the carriers were not allowed at that time to directly contact providers for the requisite information. Carriers also were not allowed to use copyrighted American Medical Association (AMA) data. These restrictions frequently led to missing or erroneous data, because carriers lacked resources for obtaining the information in other ways.

Some carriers faced additional start-up challenges. For instance, just as the implementation was commencing, Illinois BC/BS took over from EDS the carrier contract for Illinois. Simultaneously, Illinois BC/BS adopted an entirely new claims processing system, one of eight shared systems. During the late 1980s and early 1990s, HCFA required that carriers adopt a shared system (Exhibit 4-1).[5] In most instances, this meant that carriers had to utilize a standard package of software to maintain their provider files and process claims. For Illinois BC/BS, this meant that they had to convert EDS provider identification numbers (PINs) to their own system and then reconvert them to the new shared system format.

Pennsylvania BS also had problems with their operations when they assumed the New Jersey contract after UPIN implementation had commenced. Pennsylvania BS had to rectify deficiencies in the New Jersey data left by the former carrier. Because we only conducted a few site visits, we do not know to what extent other carriers experienced similar problems (e.g., a simultaneous assumption of a carrier contract or simultaneous entry into a shared system).[6]

Other weaknesses in *Registry* data stem from data elements which HCFA initially stipulated as optional, but which became required in December 1991, namely, state license number, medical school and graduation date. To obtain and process the state license numbers, for instance, was a major undertaking for some carriers. Some carriers hired temporary workers. C & S Administrative Services went to the state agencies of the states they service and xeroxed medical licenses.[7]

4.2.2 Provider Information Maintained by Carriers

In this section, we briefly describe the provider information that carriers are required by HCFA to collect for the *Registry*. We begin with a definitional matter. As used in actual operations, a *practice setting* is usually a specific location at which a physician renders service,

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[5]Pennsylvania BS is its own shared system.

[6]According to Exhibit 4-1, ten carriers entered a shared system during 1988 and 1989 and another nine during 1990. However, it is not clear to what degree the planning and implementation of the *Registry* and the shared systems interfered with each other.

[7]C & S Administrative Services reported that because of flood damage, they were unable to get copies of licenses from Maine.

EXHIBIT 4-1

CURRENT SHARED SYSTEMS ARRANGEMENTS (September 28, 1993)

PART B SYSTEMS

SYSTEM NAME	OPERATIONAL SITES	DATE
Optimum Systems Inc. (OSI/Shared Arkansas System (SAS))	Arkansas (00520)/Louisiana (00528)	01/85
	Minnesota (00720)	05/90
Proprietary (Maintained by Arkansas Blue Shield)		
Multi-Carrier System	Massachusetts/Tri-State-SP	07/88
	Mass B/S (00700)	
	New Hampshire/Vermont (00780)	
Proprietary (Maintained by Electronic Data Systems-Federal (EDSF))	Maine (21200)	
	HCSC-SP Health Care Services Corp. [aka Illinois B/S (00621)]	04/89
	Western New York-SP (00801)	11/89
	Nationwide-SP	12/89
	Ohio (16360)	
	West Virginia (16510)	
	California-SP (Cal B/S-00542)	08/90
	Texas (00900)	12/92
GTE Medicare System (GTEMS)	Florida (00590)	12/88
	Utah (00910)	10/90
	Wisconsin Phys. Serv. (00951)	03/91
Proprietary (Maintained by GTE Data Services)	Aetna	08/92
	Alaska (01020)	
	Arizona (01030)	
	Georgia (01040)	
	Hawaii (01120)	
	Nevada (01290)	
	New Mexico (01360)	
	Oklahoma (01370)	
	Oregon (01380)	
	**Washington (01390) 1/1/94	N/A

EXHIBIT 4-1 (continued)

CURRENT SHARED SYSTEMS ARRANGEMENTS (September 28, 1993)

PART B SYSTEMS

SYSTEM NAME	OPERATIONAL SITES	DATE
Metropolitan Medicare System Proprietary (Maintained by Viable Information Processing Systems (VIPS))	Kentucky (00660)	10/82
	Puerto Rico & VI (00973)	03/85
	Indiana (00630)	06/88
	CGLIC (Conn Gen Life)	12/88
	Idaho (05130)	
	Tennessee (05440)	
	North Carolina (05535)	
	Group Health Ins. (NY 14330)	10/89
	South Carolina (00880)	03/90
	Michigan (00710)	08/90
	Alabama (00510)	11/90
	Kansas-SP (00650)	10/91
	(Nebraska 00655)	10/91
	(Kansas City 00740)	
	Empire NY (00803)	11/91
	Transamerica Cal (02050)	06/92
HCFA Part B Standard System (HPBSS) Public Domain (Maintained by the Travelers)	Travelers-SP	06/88
	Connecticut (10230)	
	Minnesota (10240)	
	Mississippi (10250)	
	Virginia (10490)	
	(Railroad Ret. Board 10072)	06/88
	(Rhode Island 00870)	09/91
21st Century Medicare System-B (21MSB) Proprietary (Maintained by North Dakota Blue Shield)	North Dakota/S. Dakota-SP (00820)	05/90
	(Colorado 00550)	10/92
	Iowa (00640)	07/91
	Wyoming (00825)	

EXHIBIT 4-1 (continued)

CURRENT SHARED SYSTEMS ARRANGEMENTS (September 28, 1993)

PART B SYSTEMS		
SYSTEM NAME	OPERATIONAL SITES	DATE
BMACS (Part B Medicare Automated Claims System)	King County-SP Washington (00932) (Montana 00751)	08/91 08/91
Proprietary (Maintained by King County** Medical Blue Shield)		
GAMSS (General American Medicare Standard System)	Gen American Missouri (11260) Maryland (00690)	02/90 10/91
Public Domain (Maintained by General American)		
EXEMPTED SYSTEM	OPERATIONAL SITE	DATE
	Pennsylvania BS Pennsylvania (00865) Delaware (00570) DC (00580) New Jersey (00860)	N/A

NOTES:

N/A = Not applicable.

SP = Contractor responsible for shared processing of contractor in parenthesis below it; with EDS contractors, none except TX has a copy of the EDS software on site.

**King County will lose its carrier contract with HCFA as of January 1, 1994. Washington's new carrier will be Aetna; the new carrier number will be 01390. Montana (00751) will migrate to GTE shared system as a stand alone carrier.

SOURCE: Health Care Financing Administration.

and can usually be identified as physically separate from any other service location. In addition, when an individual physician practices under more than one organizational arrangement, e.g., group practice and solo, there will be a practice setting record for each. This would be true even if the group and solo practice locations are the same. A separate practice setting may also be defined for each payment locality in which a physician practices, even if all activities are conducted at a single site. (A payment locality is a geographic or other unit created for pricing purposes.)

Some data elements collected for the *Registry* should not change over time or by practice setting. These include the provider's date of birth, medical school, year of graduation from medical school and credentials. The only reason these four data elements should change is to correct erroneous information. The provider's name might change over time but should not vary by practice setting. Data elements that are practice setting-specific include the business and billing addresses,[8] state license number, credentials, physician status, primary specialty, group practice indicator and Medicare participation status. Three practice setting-specific data elements (secondary specialty, and primary and secondary board certification) are not required data elements, but should be transmitted to the *Registry* if available. Some of these practice setting-specific data elements generally should not vary (e.g., credentials), while others are expected to vary, but might not (e.g., business zip code). The state license number should differ only if the provider practices in more than one state.

4.2.3 Current Sources of Provider Information

The primary source of provider information is the PIN application form. Two important sources of information are the annual surveys conducted by carriers: (1) the group practice survey and (2) the Medicare participation status survey. Another source is the HCFA Inspector General's (IG) sanction report. Following a detailed discussion of these sources, we discuss less formal informational sources. We conclude with a discussion of the difficulties that may confront carriers if they are required to retrospectively "clean" data problems in their provider files.

In order to receive payment for services provided to Medicare beneficiaries at a "new" practice setting, providers need to submit an application to the carrier for a PIN. Included in the application package is a Medicare participation agreement form. The Medicare application form is often "bundled" with the application form for the carrier's private business. Several

[8]Only the business and billing address zip codes are retained by the *Registry*.

carriers require that a xerox copy of the provider's medical license be submitted with the application package.

The application package is the primary source of the provider's name, business and billing addresses, date of birth, medical school, graduation year, state license number, credentials, specialty, board certification, group practice affiliation and initial Medicare participation status. New information (e.g., specialty change) for existing practice settings is typically originated by providers.

Carriers annually survey group practices to obtain updated rosters of their providers. Upon processing of the survey data, Medicare application forms are sent by the carrier to those providers that were not previously members of the group. Based on the results of the group practice survey, carriers also de-activate practice settings for those providers no longer affiliated with a group practice. Group practice administrative personnel typically take the initiative in applying for PINs (and UPINs) in behalf of their providers.

Each November, carriers send to providers a Medicare participation agreement form which providers use to indicate whether they agree to accept assignment on all of their Medicare claims.[9] Providers who agree to accept assignment for all beneficiaries are said to *participate*. Providers with multiple practice settings may *participate* in some practice settings but not others. Carriers forward the participation survey results for each practice setting to the *Registry*.

The primary source of provider sanction information is the monthly IG sanction report. Only providers that have been sanctioned by the Medicare program are listed in the report. As of this writing, however, the IG sanction report does not contain the UPINs of sanctioned providers. As a result, it is not always easy for carriers to correctly identify providers in the sanction report. For the interviewed carriers, TOLIC is a secondary source of sanction information. Aside from identification difficulties, updating sanction information on the provider file is not a burden since the number of providers involved is usually low (e.g., for Pennsylvania BS, only 20-25 per month). Although carriers often learn of local events such as the surrender of a license, carriers do not act upon such information until official notification through the IG sanction report. In addition, carriers do not maintain on their provider file sanction information unrelated to the IG's official report.

Carriers obtain notification of date of death from six primary sources: (1) the deceased's family, (2) the deceased's office personnel, (3) newspaper obituaries, (4) state license boards, (5) medical societies, and (6) TOLIC. The carriers' degree of reliance on these sources varies. Some

[9] A provider's previous participation status is not changed by carriers if the provider fails to return the form.

carriers (e.g., Illinois BC/BS) rely primarily on TOLIC. TOLIC is often notified by the AMA when a provider is deceased. In some cases, TOLIC learns of a death from one of the several carriers that serviced the provider. When TOLIC learns of a provider's death, it sends an inquiry to the carriers for verification. When TOLIC is the initial source of the death notification, carriers typically phone the provider's offices for verification. On occasion, there have been instances in which TOLIC-provided information proved to be inaccurate. It is difficult, in general, for carriers to learn of the death of a provider. There does not seem to be any one source or method by which to easily obtain the information.

Somewhat different from the previous types of information is the status of a practice setting itself. Unless otherwise notified, carriers typically assume that it is "active." One of the most difficult tasks performed by carriers, however, is the timely identification of practice settings that are no longer active. The primary reason for the difficulty is that providers often do not notify the carrier when a practice setting is no longer active. This often happens when a provider moves to another state or leaves a group practice. Carrier response to this problem varies. Some carriers periodically purge all practice settings that do not have claims activity during a specified period. Pennsylvania BS, for instance, purges practice settings with no claims activity during the two previous years. However, some carriers make no effort to "clean" their provider file.

All of the carriers indicated that it would be an enormous and costly effort to retrospectively correct data problems existing in their current provider files, even for active practice settings only. Since they already have a PIN for their practice setting, some providers, especially solo practitioners and older providers, are unresponsive to carrier information requests. Thus, the single biggest problem in trying to correct existing data is that carriers have leverage on providers to submit the required data *only when* the provider initiates a new practice setting application.

4.2.4 Processing of Provider Information

In this section we describe the basic process by which a new practice setting for an individual provider is added to the Medicare provider file. The day-to-day operations in performing UPIN duties have evolved as carriers have gained experience and learned to meet the data quality standards set by HCFA. Florida, for instance, completely revamped the process of maintaining its Medicare provider file.

The three basic steps in the processing of information for transmittal to the *Registry* are: (1) the development of the provider application, (2) the entry of the data into the provider file, and (3) the transmittal of data to the *Registry*. The development of the provider application primarily consists of determining whether all of the required data elements are present. Carriers usually do not verify the accuracy of the information. That is, a date of birth could be feasible (e.g., January 15, 1960) but might not be accurate (e.g., January 17, 1959 is correct). Carriers maintain that they cannot verify the information because they do not have the resources to do so.

Entry of provider information into the carrier's provider file is the second step in the overall process of preparing provider information for the *Registry*. If the provider's UPIN is not present on the application form, a "look-up" key is used by carriers to find the provider's master record in the provider file. Common look-up keys employed by carriers include the social security number, tax identification number, state license number, last name or a character string composed of parts of several data elements.

When adding a new practice setting for a provider that is already present in the provider file, information from the *header* section, if such a section exists, is automatically filled for the new practice setting. Data in the *header* section consists of data elements whose values should not vary by practice setting (e.g., date of birth). If there is no valid value present for a required data element, either in the existing header section or on the application form for a new practice setting, carriers are now allowed to directly contact the provider for the missing information.[10] In adding a new provider to the file, of course, all information needs to entered.

The extent to which carriers screen or edit data before sending it to the *Registry* varies. Most carriers apply several edits and data screens, e.g., valid date formats. Some of the on-line carrier edits are minimal. In some instances, however, the on-line edits are quite extensive and comprehensive. Florida BC/BS, for example, has installed edits that will not allow an invalid medical school code. To identify data problems not caught during entry into their provider file, some carriers perform post-entry data edits before sending the data to the *Registry*. At least one carrier, Pennsylvania BS, performs routine computer runs to detect the existence of problems in their Medicare provider database. The results are then used to create update transmission records for the *Registry*.

Several carriers wanted to implement changes (e.g., new on-line edits) to their provider file. To make changes to the structure of a provider file, however, the members of the shared

[10]Despite these automated procedures to "share" common data elements across practice settings, we found within-carrier data inconsistencies for active practice settings in *Registry* data (Chapter 6 of the *Carrier Analysis*).

system must agree to any changes. If a carrier wants a change that the other carriers do not want, the requesting carrier has to incur all costs for changing it. This cost feature reduces the incentive to carriers to make modifications to their provider file.

The actual transmission of data to the *Registry* constitutes the third step in the overall process of supplying provider data to the *Registry*. Because some carriers do not perform either extensive on-line or post-entry data edits, the burden to detect erroneous and missing data frequently falls to the *Registry* contractor (TOLIC). TOLIC "returns" to carriers for further editing those records that have data elements with erroneous or missing values. This step is further discussed in section 4.4.

4.2.5 Provider Identification Numbers (PINs)

The establishment of the *Registry* and UPINs has not eliminated the use and issuance of carrier-assigned PINs. As currently designed, UPINs do not have any "intelligence" incorporated in them to identify individual practice settings. Since carrier-assigned PINs have intelligence incorporated in them, they continue to be used in claims processing.

Providers often desire multiple PINs in order to facilitate generation of income statements for separate practice settings. C & S Administrative Services, on the other hand, has found that solo providers often do not want the carrier to learn about the existence of multiple physical practice settings.

Carriers are allowed to determine whether to issue separate PINs to each physical practice setting location of a provider. Florida BC/BS, for instance, will issue a separate PIN to a provider for each location within a payment locality. Pennsylvania BS, in contrast, limits solo providers with multiple practice settings within a geographic payment locality to one PIN. If a "solo" provider also has a group practice affiliation within the same payment locality, however, Pennsylvania BS will issue the provider a separate PIN for the group practice affiliation.

The carriers we interviewed issue unique PINs.[11] PINs, however, vary in length and in structure by carrier. Pennsylvania BS, for instance, currently uses six positions but it has the capacity to utilize nine positions. PINs usually consist of at least two parts: (1) the base PIN for the provider and (2) the practice setting number (indicator). For Florida BC/BS, the first five positions constitute the base PIN while the sixth position indicates the practice setting. TOLIC's PINs have a third part, a *W* prefix to indicate group practice settings.

[11]Some carriers, however, issue non-unique PINs. It is unclear, however, how widespread non-unique PINs are.

4.2.6 Workload and Staffing

In addition to their Medicare provider file, most carriers also have a private business (e.g., Blue Shield) provider file. Although the Medicare and the private business provider files are kept separate, there is some commingling of file maintenance activities (e.g., development of provider applications). Additionally, UPIN duties constitute only one aspect of the maintenance of the Medicare provider file. Finally, not all of the interviewed carriers had a UPIN line-item within their Medicare provider file budget. As a consequence the staffing figures presented below represent carrier estimates.

The carriers interviewed during the site visits tended to be much larger than average. Thus, the average weekly workloads and provider file staffing presented in Table 4-1 are not representative of the typical carrier. The workload for UPIN duties is typically defined in terms of the number of "carrier" records submitted to the *Registry*. Aside from the RRB, TOLIC has the largest workload with an average weekly volume of 1,500 carrier records, of which 250 are "new" adds (i.e., new practice settings). In contrast, even though it also is much larger than the average carrier, C & S has a much lower average weekly workload of 300-400 carrier records.

Depending on the volume, carriers typically transmit new data to the *Registry* once or twice a week. There is seasonal variation in carrier workload. The workload is high during June and July when a large number of new applications (new "adds") are submitted following graduation from medical school. The workload is also high in early fall when the group practice survey is conducted and in the late fall when the Medicare participation survey is conducted.

As reported by the carriers, UPIN duties constituted less than 20 percent of the labor effort in maintaining the Medicare provider file for all except C & S Administrative Services and the RRB. *Registry* duties, such as transmitting data to the *Registry* and communicating with *Registry* personnel, are often the responsibility of one person (although not their sole duty). Unlike other carriers, Illinois BC/BS rotates UPIN duties among their provider file staff so that UPIN duties will not be disrupted by the absence of one individual.

Although the carriers generally did not consider that their current UPIN duties are burdensome, several complained about how long it takes to transmit data via a modem connected to a personal computer (PC). Also, because of the long time it takes to transmit data, the likelihood of transmission disruptions increases, which necessitates the re-transmission of

TABLE 4-1

CARRIER UPIN WORKLOADS AND STAFFING

	C & S Administrative Services	Transamerica Occidental Life Insurance (TOLIC)	Pennsylvania Blue Shield	Illinois BC/BS	Florida BC/BS	Railroad Retirement Board (Georgia)
Average Weekly Workload (Carrier Records Transmitted to Registry)						
Total adds plus updates	300-400	1,500	1,110	250-1,000	600	2,000
New adds	150-200	250	N/A	N/A	N/A	500
Medicare Provider File Staffing						
Total staffing	5.0	8.0	12.8	7.0	8.0	13.0
UPIN staffing (FTEs)	2.0	1.0	2.5	1.0	1.0	11.0
UPIN share	40.0%	12.5%	19.6%	14.3%	12.5%	84.6%

NOTES:

1. BC/BS: Blue Cross/Blue Shield.
2. N/A: not available.
3. FTE: full-time equivalent.
4. The UPIN staffing for Florida BC/BS is a minimum value while the value for Illinois BC/BS was estimated by HER staff.
5. Florida BC/BS UPIN staffing is not part of the provider file budget.

SOURCE: Carrier Site Visits (August - September 1993).

the data. In addition, the use of a PC to obtain hard copy TMAIL[12] is often cumbersome. To reduce transmission time, Pennsylvania BS is investigating the possibility of mainframe to mainframe transmission of data. Illinois BC/BS also indicated interest in mainframe to mainframe communication.

4.2.7 UPINs and Claims Processing

Although *referring* UPINs and PINs are required on the HCFA-1500 claims form, currently there is no designated location for the *performing* UPIN. As noted earlier, provider often have multiple PINs. Therefore, prior to submitting claims to the Common Working File, carriers must "cross-walk" the performing physician's PIN to the UPIN on the provider file. All of the interviewed carriers indicated that performing UPINs were automatically posted on all claims.

4.3 Railroad Retirement Board (Georgia) Operations

The RRB carrier operations are unique within the Medicare system and, as such, present special challenges. In particular, RRB carriers do not have the same access as other carriers to high quality provider information. As a consequence, RRB carriers are more likely than other carriers to submit inaccurate or incomplete carrier records to TOLIC. Because of the large number of providers they service, the RRB carriers are often associated with a disproportionately large share of the missing values and erroneous values found in *Registry* data. For instance, the overall missing/erroneous value rate for birth year in 1992-93 for all carriers was 5.2 percent. For the two RRB carriers the combined rate was 15.2 percent while for the other carriers, the combined rate was 0.33 percent (*Carrier Analysis*, Chapter 4). The reasons that RRB carriers have difficulties obtaining quality information are described in the next section.

4.3.1 Obtaining Basic Provider Information

As a system, the RRB predates Medicare. RRB beneficiaries, unlike the beneficiaries of other carriers, are drawn from throughout the country, and so are their providers. Whenever a

[12]TMAIL is the message and inquiry portion of Registry operations.

RRB beneficiary obtains medical care, the claim is submitted to the RRB rather than to the usual Medicare carrier for the state. This situation presents the RRB carrier with added difficulties in obtaining and validating UPIN information. Not only is their UPIN workload large (Table 4-1), but they are also physically more remote from the necessary sources of information.

The RRB often has difficulties obtaining data from providers. The main reason is that most providers do not provide care for many RRB beneficiaries. For this reason alone, providers have little incentive to fully cooperate with the RRB. RRB relations with providers are aggravated by Medicare reimbursement rules. In contrast to Medicare, the reimbursement amount is determined by beneficiary's residence rather than the provider's location. Further, if the provider has entered into a Medicare participation agreement, the provider must accept assignment. Since the reimbursement amount may be substantially lower than the amount to which the provider is accustomed, being forced to accept assignment aggravates providers.

In addition to difficulty in obtaining information from providers, data entry errors can arise because providers do not need to submit RRB application forms. That is, the RRB can not insist that providers use RRB application forms for new practice settings, because HCFA allows providers, instead, to submit copies of applications previously submitted to their Medicare carrier(s). Because the layout of application forms varies by carrier, it is easier for data errors to occur. For instance, data entry clerks may enter the graduation year instead of the birth year if they have similar locations on different forms. Another problem, in the past, was that Medicare participation status collected by other carriers had to be manually entered by the RRB carriers into their provider files. Only recently were the RRB carriers able to receive data tapes directly from the other carriers.

4.3.2 Workload and Staffing

As a consequence of the national distribution of their beneficiaries, the RRB has many more providers to service than any other carrier. Additionally, the RRB continues to add more providers to their provider file than other carriers. As a result, the number of carrier records submitted to the *Registry* by the RRB averages 2,000 per week, of which 500 are new "adds." The RRB workload is a third larger than that of TOLIC, the carrier with the next highest workload (Table 4-1). To handle the large volume of carrier records when the *Registry* was created, the RRB had to increase their provider staff from two to 13. One person is dedicated specifically to working on transmissions to and from the *Registry*, while another person processes *Registry* rejects. UPIN duties account for 85 percent of the provider staff's effort –

more than twice as high as the next highest carrier interviewed (C & S Administrative Services).

At present, because of HCFA regulations regarding timeliness of application processing, the RRB transmits data to the *Registry* on a daily basis. Because TOLIC is not always able to process RRB data on a daily basis, duplicate records for the same practice setting often arise. This causes further confusion for both TOLIC and RRB personnel as they try to determine the current status of a given practice setting. Additionally, the RRB forwards incomplete records to the *Registry* even though it knows that the *Registry* will flag the record due to erroneous or missing values. No doubt, as a result of these problems, the RRB reported that TOLIC cooperation is not as satisfactory as it could be.

4.3.3 The RRB Role in Registry Duties

Aside from the difficulties in obtaining information, the participation of the RRB in the *Registry* leads to a duplication of effort. In theory, each of the two RRB carriers could have every active practice setting in the nation. At a maximum, then, two-thirds of all active practice settings in the *Registry* would be from the RRB carriers. Although the theoretical maximum has not been approached, the two RRB carriers are ranked first and third among carriers in terms of the number of practice settings maintained on the *Registry*.

The RRB carriers anticipated that their participation in the *Registry* would represent a duplication of effort. In consequence, they made two attempts to change their relationship with the *Registry*. The RRB requested that the *Registry* send *Registry* data to them, in order to assist them in maintaining RRB records. The RRB then would not need to otherwise participate in *Registry* activities. Failing that, the RRB would have liked to obtain, via on-line data searches, the values of data elements missing from their application forms. HCFA denied both requests.

4.4 Registry Contractor Operations

The primary functions of the *Physician Registry* are to issue UPINs and to ensure the integrity of the data it maintains. To accomplish these goals, TOLIC is responsible for integrating the provider data submitted by carriers into a master file. For any given provider, TOLIC maintains one record in the *Registry*.

To gain an understanding of how TOLIC maintains *Registry* data, in this section we describe the basic operations of the *Registry*. We start with a brief review of the 1989 implementation phase. The current staffing and workload is discussed next. A description follows on the structure of *Registry* records and the data edits applied by TOLIC. This is followed by separate sections on how TOLIC updates existing practice setting and header information. This, in turn, is followed by a discussion of how new practice settings are added to the *Registry* and when new UPINs are issued. A discussion of selected data issues follows. We conclude with a discussion of continuing problems with carrier submissions.

4.4.1 Implementation Phase

As noted earlier, TOLIC processed over 1.2 million records during the first five months of 1989. Many of these records, however, were redundant or not otherwise suitable for inclusion in the *Registry*. By the end of 1989, over 465,000 UPINs had been issued involving nearly 970,000 practice settings. The total number of records processed surpassed HCFA's estimates by a substantial margin.

In addition to missing information on records submitted by the carriers, the quality of the "name" information was poor. In many cases, only the first initial of the first name could be used in the matching process to identify individual providers and their associated practice settings. The date of birth was also used in the matching process, but because the date of birth was missing for nearly 60,000 providers (*Carrier Analysis*, Table 4-1), it was not as useful as it might have been.[13]

4.4.2 Current Workload and Staffing

At the time of site visit, the annual rate of new practice settings was 300,000 and the annual rate of updates was 500,000. This volume exceeded HCFA's original estimates of the workload. In addition to maintaining *Registry* data, TOLIC regularly prepares reports on carrier performance. Included in the individual carrier reports are summary statistics on the types and volume of each record type processed, including exception records as well as "add" and "update" records.

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[13] As described in Chapter 1 of the *Carrier Analysis*, AMA data was used to help identify individual medical doctors.

Registry staffing consists of nine persons dedicated solely to maintaining the *Registry*, including the director, a computer programmer, six analysts, and a clerk/typist. To assist the staff in expediting communications with carriers, a telecommunications system was established. In addition to the electronic transmission of carrier records described earlier, the system includes an electronic mail component (TMAIL) and a display system (RCICS). TMAIL allows *Registry* and carrier personnel to post messages, including inquiries regarding current record submissions. The RCICS system allows carriers to view records contained in the *Registry's* master file and to view records awaiting further development (e.g., records held in "suspense"). Carriers can also "download" hard copies of the carrier performance reports prepared by the *Registry*.

4.4.3 Structure of Registry Provider Records and Data Edits

A provider's record in the *Registry's* master file consists of a *header* section, containing data that should be invariant across practice settings, and a *practice setting* section. Within the practice setting section, there are as many practice setting segments as the provider has practice settings, both active and inactive. Data in the header section are derived from the practice setting information on a flow basis as submitted by carriers on "add" or "update" records. The first practice setting entered into the *Registry* was the source of the original header data.

Several data elements are common to both the header and practice setting segments of the provider record (see Exhibit 4-2). Of the common data elements, only the name fields are not automatically updated on the header segment when new feasible values are available on incoming carrier records. For the other common data elements (e.g., date of birth, date of death, medical school code, graduation year, and the three sanction data elements), whenever a new or updated practice setting is submitted, any new feasible value automatically replaces an old header value (regardless of the feasibility of the old value).[14]

TOLIC reported that some carriers seem to believe that it is the responsibility of the *Registry* to detect errors. Our interviews with the case study carriers suggest that this perception is accurate. While it is part of TOLIC's duties to ensure *Registry* data quality, carriers are not supposed to rely on TOLIC to perform basic data edits. Such confusion about the respective roles of TOLIC and the carriers in ensuring data integrity has led to weaknesses in the *Registry* data base.

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[14]The provider's last name and the first letter of the first name need to match before the other elements are automatically updated – see section 4.4.5 for additional details.

EXHIBIT 4-2

REGISTRY DATA ELEMENTS

Data Element	SECTION OF EACH RECORD	
	Header	Setting
Physician last name	X	X
Physician first name	X	X
Physician middle name	X	X
Physician suffix	X	X
Previous physician last name	X	X
Previous physician first name	X	
Previous physician middle name	X	
Previous physician suffix	X	
Date of birth	X	X
Date of death	X	X
Medical school	X	X
Year graduated	X	X
Sanction code	X	X
Sanction, effective date	X	X
Sanction, number of years	X	X
State license number		X
Physician status		X
State licensed in		X
Credentials		X
Primary specialty		X
Primary board certification		X
Secondary specialty		X
Secondary board certification		X
Date setting was added		X
DRIP status		X
Group practice indicator		X
Participation indicator		X

NOTE: X indicates location of data elements.

Before incorporating new data into the *Registry*, TOLIC screens the data elements using what it calls "on-line edits" (Exhibit 4-3). The *on-line edits* developed by TOLIC have evolved over time. However, it appears from the data presented in Chapter 4 of the *Carrier Analysis* that errors exist in the *Registry* data even for practice settings added as recently as 1992 and 1993. For instance, 1,025 erroneous birth year values were found in practice settings added to the *Registry* during 1992-93.[15]

4.4.4 Updating Existing Practice Settings

To update an existing practice setting, the UPIN, PIN and name fields on records submitted by carriers must exactly match the corresponding fields in the practice setting maintained in the *Registry's* master file. Name changes are the only exception to this requirement. Aside from the UPIN, PIN and name fields, the only other required data element is the one involved in the change. Update records that meet these requirements and have feasible values for the affected data element are used to automatically update the corresponding data element on the master file.

Submitted records that do not meet the aforementioned requirements or have a non-feasible value for the affected data element go into suspense as "exceptions." The *Registry* then posts a record into the carrier's area indicating that a problem exists and, if possible, the nature of the problem.[16] The carrier has 15 days to respond to the exception record. In responding to exceptions, some carriers incorrectly submit the carrier record as an "add" exception rather than as a re-submission of an "update." If this happens, it sometimes can take a large amount of effort for TOLIC and the carriers to detect and eliminate the error.

4.4.5 Updating Existing Header Information

Header information is updated when one of the data elements common to both the header and practice setting changes. There are two ways in which a change to a header data element is initiated. The update to the header can be initiated through an update to a common data element on an existing practice setting. The other is through the addition of a new practice setting.

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[15]Although the RRB carriers have the highest rates of erroneous and missing values, other carriers also have submitted practice settings with infeasible birth years.

[16]The details of this process can be found in Chapter 1 of the *Carrier Analysis*.

EXHIBIT 4-3

REGISTRY DATA EDITS (October 19, 1993)

UPIN ON-LINE EDITS		
FIELD	DATA NAME	EDITS
001	CAR-RECORD-CODE	Must be 1, 2, 5 or 7.
002	CAR-PHYSICIAN-STATUS	Must be 1 when CAR CREDENTIALS = MD Must be 2 when CAR CREDENTIALS not = MD
003	CAR-LAST-NAME	Must not be BLANK.
004	CAR-FIRST-NAME	Must not be BLANK.
008	CAR-CITY1	Must not be BLANK.
009	CAR-STATE1	Must be a valid state.
010	CAR-ZIP-AND-SFX1	Must be greater than ZERO.
013	CAR-STATE2	Must be a valid state.
015	CAR-STATE-LICENSED	Must be a valid state.
016	CAR-STATE-LIC-NUMBER	Must not be ZERO or BLANK.
017	CAR-DATE-OF-BIRTH	Must be numeric, month cannot be greater than 12, day cannot be greater than 31.
018	CAR-MED-SCHOOL-CODE	Must be a valid school code and must be valid for the credential in CAR-CREDENTIALS. MD must have an MD school, DPM must have a DPM school, etc.
020	CAR-DATE-OF-DEATH	If not ZERO, month must be less than 13 and day must be less than 32.
021	CAR-CREDENTIALS	Must be a valid credential, must be MD or DO when CAR-PHYSICIAN-STATUS = 1 and other than MD or DO when CAR-PHYSICIAN-STATUS = 2.
022	CAR-PRIMARY-SPECIALTY	Must be a valid specialty.
023	CAR-PRIMARY-BD-CERT	Must be a valid certification code.
024	CAR-SECOND-SPECIALTY	Must be a valid specialty.
025	CAR-SECOND-BD-SPECIALTY	Must be a valid certification code.
026	CAR-SANCTION-CODE	Must be a valid sanction code when not BLANK.
027	CAR-EFFECTIVE-DATE	Must be numeric when not ZERO.
028	CAR-NO-YRS-SANCTION	Must be numeric when not ZERO.
029	CAR-RES-INTERN-CODE	Must be a valid indicator. Must be equal to D when CAR-DATE-OF-DEATH is greater than ZERO.
030	CAR-GROUP-PRACTICE-IND	Must be a valid group indicator.
031	CAR-PARTICIPATING-IND	Must be a valid indicator.
033	CAR-PROVIDER-NUMBER	Must not be BLANK or ZERO.
034	CAR-UPIN-ERROR-CODE	Must not be BLANK or ZERO when CAR-MPIER-UPD-FLAG = Y. Must be given for CAR-RECORD-CODE = 5 or 6.
035	CAR-CONTROL-NUMBER	Must not be ZERO or BLANK when CAR-RECORD-CODE = 2 or 6.
036	CAR-CARRIER-NUMBER	Must be a valid carrier.

EXHIBIT 4-3 (continued)

REGISTRY DATA EDITS (October 19, 1993)

UPIN ON-LINE EDITS		
FIELD	DATA NAME	EDITS
039	CAR-MPIER-UPD-FLAG	Must be a valid flag. CAR-RECORD-CODE = 1 or 2 may have a value or BLANK or Y. If Y CAR-UPIN-ERROR-CODE must be present. CAR-RECORD-CODE = 5 or 6 may have a value of BLANK, 1 or 2. If 1, CAR-SPEC-PROCESS-DATA must contain physician's last name as it appears on the MPIER file. If 2, CAR-SPEC PROCESS-DATA must contain the physician's old provider number as it appears on the MPIER file. CAR-UPIN-ERROR-CODE must be present.
040	CAR-SPEC-PROCESS-DATA	Must not be BLANK when CAR-RECORD-CODE is equal to 5 or 6 and CAR-MPIER-UPD-FLAG is equal to 1 or 2.

EDITION: 10/19/93.

SOURCE: Transamerica Occidental Life Insurance Co.

Changes to the header through "updates" to existing practice setting information are automatically performed once the carrier submission has been accepted by TOLIC. For new adds (i.e., new practice settings) submitted with a UPIN, the provider's last name and first initial must match (on the header) before the submission is processed and accepted. Once the new information has been accepted, changes to header values are automatically performed if the values on the new practice setting differ from the previous header values.

In all cases, the "older" header value originated from previously submitted practice settings. Thus, for multiple-practice providers, any new header value must conflict with at least one of the practice setting values. TOLIC, *per se*, does not resolve differences in practice setting values. The means by which TOLIC might resolve discrepancies are limited. For instance, if two or more carriers have submitted inconsistent information and all of them claim that their information is correct – as is usually the case – TOLIC does not have the mechanism to research the question and to decide which values are correct.

4.4.6 New Practice Settings and the Issuance of New UPINs

TOLIC has a set of procedures designed to prevent assignment of multiple UPINs to a provider. For carrier records submitted without a UPIN, TOLIC seeks a computerized match against the header information of providers already included on the *Registry*. The match is based on a key constructed out of the first three letters of the provider's last name, the first letter of the first name, a "soundex" value based on the remaining letters of the last name and, in some cases, a zip code.

If the "keys" match, then the computer algorithm checks practice setting information. The provider's last name, first name, middle initial, full date of birth, school code, graduation year and state licensed must all exactly match in order to attach the practice setting to an existing provider record. When checking the provider's existing practice settings, the algorithm checks one practice setting at a time.

If a match is not found, TOLIC then checks an AMA data extract. If a match still is not found, TOLIC's system flags the new practice setting for manual review. A TOLIC analyst then reviews existing UPIN records with the provider's last name providing the basis for the initial screening element. When reviewing records, the analyst has full access to both header and practice setting information. If a match to an existing record still is not found, a new UPIN is issued.

For incoming carrier records with a UPIN, the provider's last name and the first letter of the first name need to match the header versions. If a match is found, then a new practice setting is added to the provider's record. If a match is not found, then the new practice setting goes through the identification process above, as if the "add" record had been submitted without a UPIN.

4.4.7 Data Integrity Issues

TOLIC is aware that *Registry* data is not complete and that other flaws exist. For instance, provider information obtained during the implementation phase was often incomplete or erroneous. To remedy the situation, TOLIC has developed a program to retrospectively edit this data. They are awaiting permission from HCFA before implementing it.

There are also a number of data problems that occur on an on-going basis. For instance, as previously discussed, obtaining date of death is a haphazard process. To compensate for carrier deficiencies in obtaining and submitting provider sanction information, the *Registry* often initiates inquiries into the sanction status of providers, in a process it calls sending "notifications". The *Registry* receives quarterly reports in electronic form from the IG. The electronic report, as with the monthly hard copy IG sanction report received by carriers, does not contain UPINs. *Registry* staff, therefore, need to correctly match sanctioned providers with providers in the *Registry*. TOLIC then posts a flag to the records of sanctioned providers, asking for carrier verification of the event.

As in the case of death, TOLIC is not allowed to post sanction information into the *Registry* until verified by a carrier. Most sanctions are substantiated by carriers. In the event TOLIC and carriers cannot reach agreement regarding the sanction status of a given provider, HCFA makes the final decision.

There does not seem to be a clear policy on changing the Registry records of reinstated providers to reflect reinstatement. Since the *Registry* is not involved in a provider's reapplication to become a Medicare provider, TOLIC does not remove sanction information on its own initiative. The *Registry* and carriers are currently seeking guidance from HCFA in this regard.

4.4.8 Continuing Problems with Carriers

TOLIC has four continuing problems with carriers. They are: (1) submission of incomplete carrier records, (2) the quality of carrier records submitted by the RRB carriers, (3) duplicate UPINs and (4) the training of new carrier UPIN coordinators.

Carrier records submitted without complete information cause computerized matching algorithms to fail. The lack of complete information also makes it difficult to match to AMA data. The result is that manual review becomes necessary, which increases turnaround time.

RRB carrier records, in particular, often have incomplete information when submitted to the *Registry*. In addition to incomplete data, mistakes are also present. For instance, provider names are misspelled and components of date fields are not provided in the proper format (e.g., month and year submitted as YYMM instead of MMYY). To correct RRB data problems, the *Registry* often obtains the requisite information itself. For instance, the *Registry* contacts state licensure boards to verify provider license numbers.

As reported by TOLIC, duplicate UPINs are still a problem, especially for "other doctors" (i.e., limited license practitioners). Alternative spelling of names and date of birth differences are the primary reason for duplicate UPINs. Slight differences between the values of these two data elements on new practice settings and for providers already included in the *Registry*, cause computerized algorithms to fail to find a match. Although a manual review of the records is performed when computerized algorithms fail to find a match, the manual review depends, in part, on computerized searches. These searches are specially sensitive to the transposition of the birth year digits (e.g., 36 for 63). That is, only *Registry* records that have a date of birth within ten years of the date of birth on the new practice settings are presented to the reviewer. If a reviewer cannot match the new practice setting to a provider record already included in the *Registry*, a new UPIN is issued.

Finally, TOLIC cited the turnover of carrier UPIN coordinators as a continuing problem. New coordinators are frequently not trained by the carriers and they have not learned the telecommunications system. As a consequence, they burden Registry staff with inquiries that could be answered by the carrier manual. And until they have acquired sufficient experience, new coordinators are more likely to submit records that do not conform to *Registry* specifications.

4.5 Summary and Observations

The high rates of missing and erroneous values for several data elements (e.g., date of birth) in the *Registry* master file are largely attributable to (1) problems experienced in the implementation phase (2) subsequent changes in data element status from optional to required, and (3) the lack of retrospective editing. The rates of missing and erroneous values for new provider practice settings have declined as TOLIC has tightened its on-line data edits and the carriers have increased the accuracy of submitted data.

TOLIC still commits substantial resources to maintaining the master file. Ten percent of the 800,000 records processed annually do not pass the automated data checks. While a disproportionate share of the records needing additional development were submitted by RRB carriers, there are other carriers that also consistently submit data that do not conform to *Registry* specifications. Furthermore, the collecting of death information is still a haphazard process; and procedures for maintenance of sanction information have not been resolved to the satisfaction of all parties.

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